

**CONNECTICUT RIVER BASIN  
LEVERETT, MASSACHUSETTS**

**LEVERETT POND**

**MA 00525**

**PHASE I INSPECTION REPORT  
NATIONAL DAM INSPECTION PROGRAM**

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**DEPARTMENT OF THE ARMY  
NEW ENGLAND DIVISION, CORPS OF ENGINEERS  
WALTHAM, MASS. 02154**

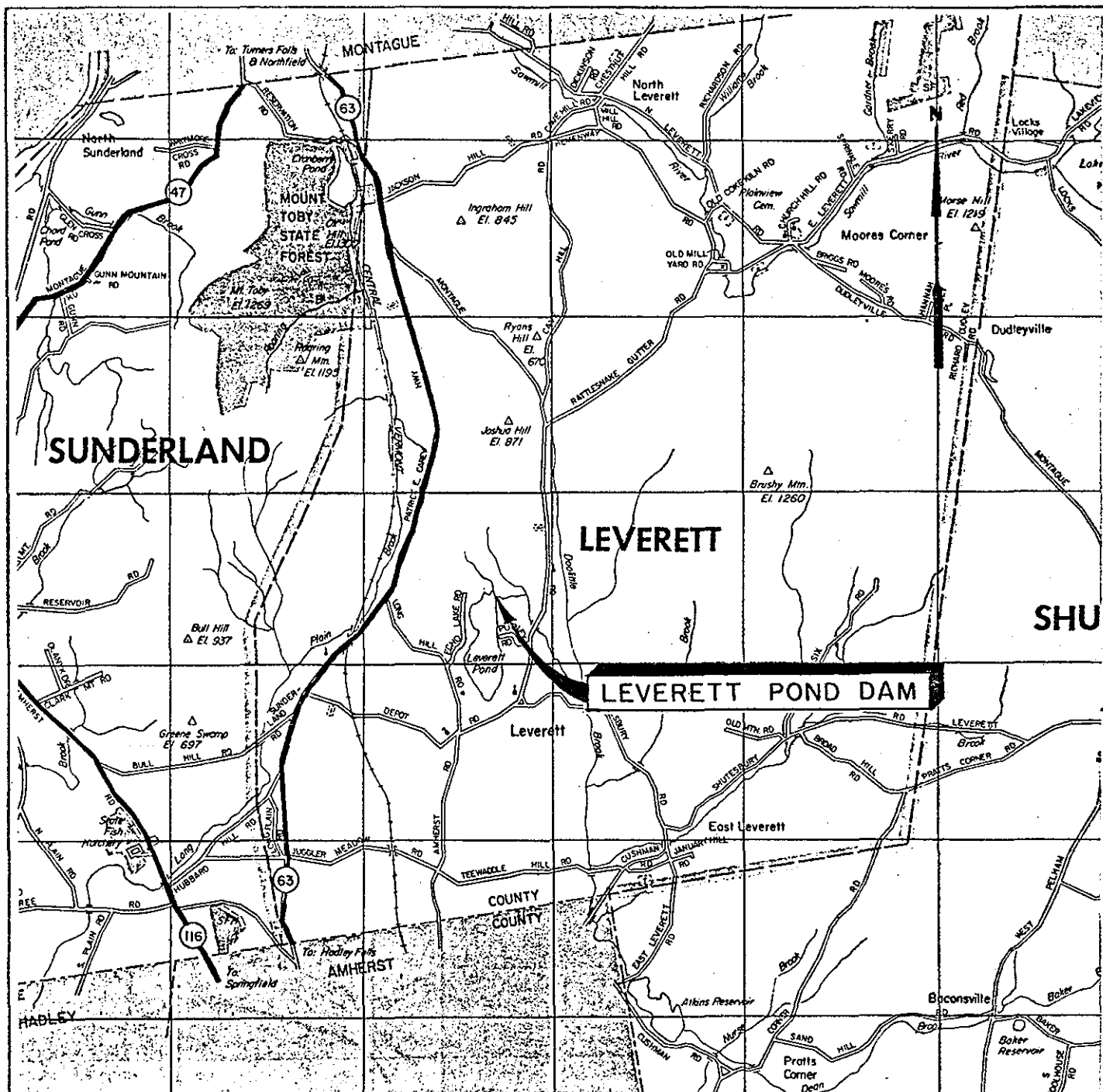
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  The dam is about 15 ft. wide, 6 to 8 ft. high by 15 ft. long earthfill structure having a 2 ft. wide concrete spillway chute passing through the approximate center. It is considered to be in poor condition. The spillway chute was observed to be blocked with debris and the embankment showed indications of continual erosion at the concretefill interface. The dam in effect acts as a full width spillway.		



HAYDEN, HARDING & BUCHANAN, INC.  
CONSULTING ENGINEERS  
BOSTON, MASSACHUSETTS

U.S. ARMY ENGINEER DIV. NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM, MASS.

NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

## LEVERETT POND DAM

LEVERETT

MASSACHUSETTS

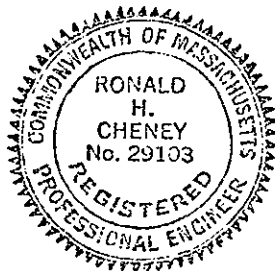
SCALE: 1" = 5280'

DATE: FEBRUARY, 1979.

This dam in effect acts as a full width spillway. As this dam is now operated, water can be expected to flow over the crest frequently. Therefore, the owner should engage a qualified engineer to design adequate repairs for the downstream eroded areas at the spillway chute and the dam embankment. These repairs should be such that future erosion will be prevented. These areas are shown in photos 1 and 2.

Remedial measures regarding operational and maintenance procedures should include removal of trees adjacent to the left wall of the spillway chute and removal of debris in the spillway chute and top of the dam.

All recommendations and remedial measures should be implemented within one year after receipt of this Phase I Inspection Report by the owner.



*Ronald H. Cheney*  
Ronald H. Cheney, P.E.  
Associate

Hayden, Harding, & Buchanan, Inc  
Boston, Massachusetts



## PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Inspections. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation: however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

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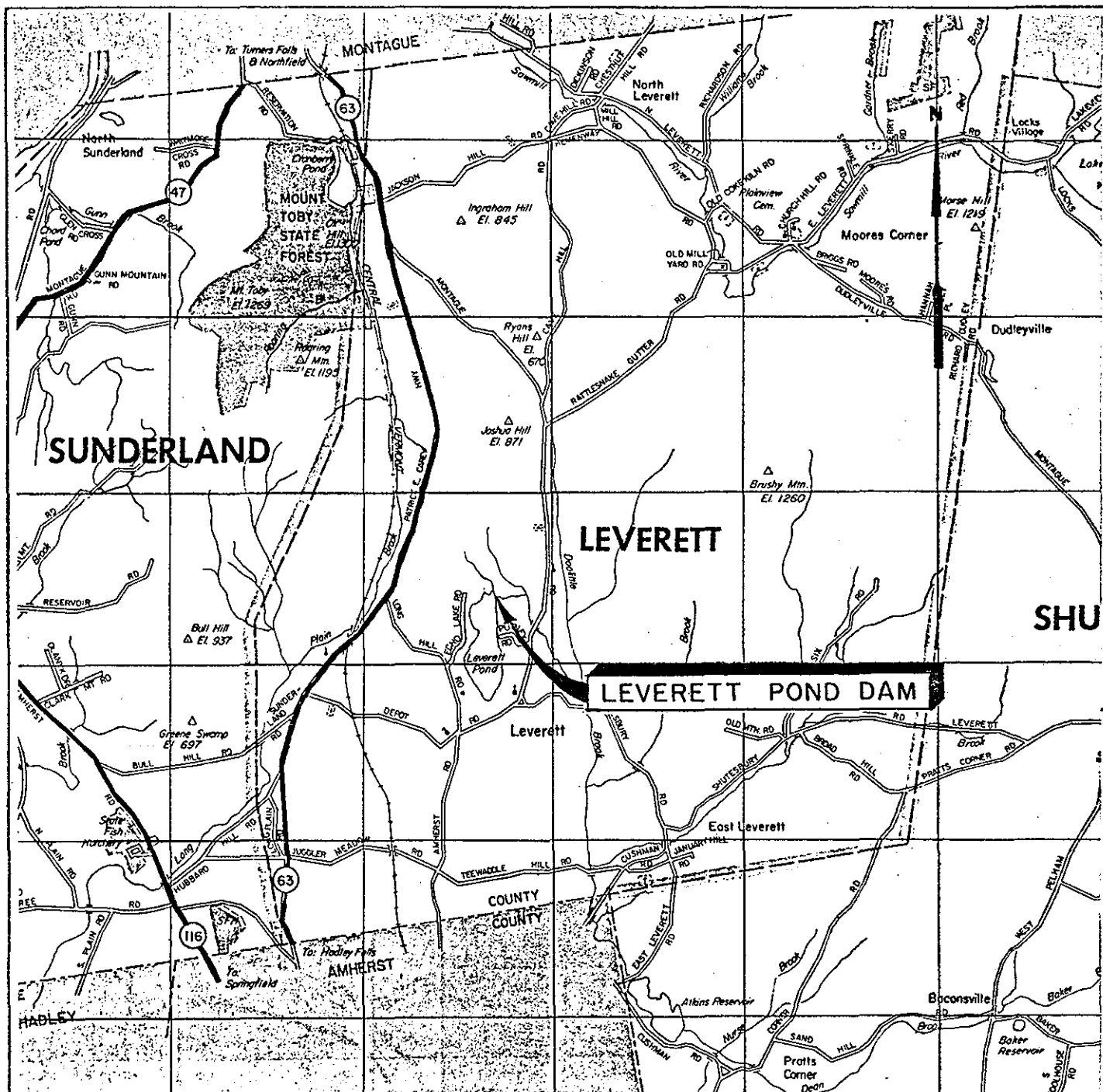
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NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

## LEVERETT POND DAM

LEVERETT

MASSACHUSETTS

SCALE: 1" = 5280'

DATE: FEBRUARY, 1979.

PHASE I  
NATIONAL DAM INSPECTION PROGRAM  
NAME OF DAM: LEVERETT POND

SECTION 1  
PROJECT INFORMATION

1.1 General

a. Authority

Public Law 92-367, August 8, 1972, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a national program of dam inspection throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region.

Hayden, Harding & Buchanan, Inc. has been retained by the New England Division to inspect and report on selected dams in the State of Massachusetts. Authorization and notice to proceed was issued Hayden, Harding & Buchanan, Inc. under a letter of 28 November 1978 from Max B. Scheider, Colonel, Corps of Engineers. Contract No. DACW 33-79-C-0012 has been assigned by the Corps of Engineers for this work.



b. Purpose

(1) Perform technical inspection and evaluation of non-Federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-Federal interests.

(2) Encourage and assist the States to initiate quickly effective dam safety programs for non-Federal dams.

(3) To update, verify and complete the National Inventory of Dams.

1.2 Description of Project

a. Location

The dam, Leverett Pond, is located in the Town of Leverett in Franklin County, Massachusetts. The pond is formed by the overland and ground flow of the surrounding hilly area. The dam is located at the northern shore of the pond. Leverett Pond is shown on the U.S.G.S. Mt. Toby Quadrangle, Massachusetts, with the approximate coordinates of North  $42^{\circ} 27' 42''$ , West  $72^{\circ} 30' 18''$ .

b. Description of Dam and Appurtenances

The dam is a relatively low (6-8 feet high) miscellaneous earth fill embankment constructed over a bedrock low about 20 feet wide. The dam abutments consist of bedrock. Located at the center of the embankment is a narrow concrete spillway chute having concrete side walls, a concrete apron, a sluice gate and provisions for stop logs. The spillway chute has a height of about 5 feet, a width of 2 feet and a length of 10 feet. During periods of high pond outflow, the

entire dam acts as an overflow spillway. Located upstream and adjacent to the spillway chute, is an approximate 3 foot by 8 foot stepped concrete apron. The spillway has provisions for a 6-inch high stop log. According to the 1975 State Inspection sketch there is a 2' by 2' wooden slide gate covering a 1' by 1½' sluice box inlet located at the upstream base of the spillway chute. The gate is held in place by a set of 3" angle iron guides. During our inspection the sluice gate was covered by trash and ice, making field verification and inspection of this appurtenance impossible.

c. Size Classification

The dam is classified as small according to its height and storage capacity of 6-8 feet and 525 a-f, respectively.

d. Hazard Classification

For a dam failure no structures below the dam appear to be flooded, and loss of life is not apparent. The hazard classification is low.

e. Ownership

The dam is owned by Mrs. Lucille W. Lewis of Main Street, Wendel, Massachusetts 01379. The name of this structure is also referred to as Beamon-Marvel Co., Dam No.2, indicating that a firm by that name may have been a previous owner.

f. Operator

The caretaker of the dam is Mr. Greg L. Woodard of Amherst Road, Sunderland, Massachusetts 01054, Telephone (413) 665-3948.

g. Purpose of Dam

The purpose of this dam is to control the water level of Leverett Pond for recreation.

h. Design and Construction History

No plans or records regarding the design or construction of the structure were located. Observation of what appears to be earlier construction, the overall condition of the dam, and reference within the Corps of Engineers Inventory Data Sheet, indicate that the original dam was probably constructed during the early 1900's.

i. Normal Operational Procedure

There is no formal operational procedure for this dam. Normal maintenance is performed by the caretaker. No regulating of the water level is performed by the owner, although the owner attempts to remove any obstructions that may affect the water level of the pond.

1.3 Pertinent Data

a. Drainage Area

The drainage area (442 acres - 0.69 s.m.) is comprised of wooded hilly terrain (60%) and flat or hummocky land around the pond (40%). Runoff drains directly into Leverett Pond.

Development within the drainage area is limited to a few homes at Leverett and along the east and west shores of the pond.

About 2000 feet downstream of the dam at Montague Street, two buildings are within 200 feet of the outlet stream. There are no additional structures along the outlet stream below this point until its confluence with Doolittle Brook, approximately one mile downstream of the dam.

b. Discharge at Dam Site

There are no outlet works other than the overflow spillway (entire dam) and spillway chute. The chute structure is 2 feet wide by 5 feet deep with an upstream invert elevation of 412± feet. An approximate 2 foot by 2 foot wooden slide gate is located over a 1½ foot by 1 foot concrete sluice box inlet at the upstream base of the spillway. It appears to be the normal procedure to leave this gate in place.

Although this dam was probably originally constructed during the early 1900's, no data is available on maximum known flood discharges at this site. The State Inspection Report for March 24, 1977 noted that the entire dam was being overtopped by 2 to 3 inches of water.

The overflow spillway is ungated. For the 100 year flood inflow (test design flood) equal to 517 cfs, flow over the spillway would be at elevation 417.4 or 0.4 feet over the top of the dam. The entire top of the dam acts as a spillway during high water.

c. Elevation (ft. above MSL)

- (1) Streambed at centerline of dam-----410±
- (2) Maximum tailwater-----413±
- (3) Upstream portal invert diversion tunnel-----none
- (4) Recreation pool----- (spillway crest) 417±
- (5) Full flood control pool----- N/A
- (6) Spillway crest (with stop log ) 417±
- (7) Design surcharge (Original Design)-----unknown
- (8) Top Dam-----417±
- (9) Test flood design surcharge----- 417.4±

d. Reservoir

- (1) Length of maximum pool-----4100'
- (2) Length of recreation pool-----3700'±
- (3) Length of flood control pool----- N/A

e. Storage (acre-feet)

- (1) Recreation pool-----525
- (2) Spillway crest pool-----525
- (3) Top of dam-----525
- (4) Flood control pool-----N/A
- (5) Test flood pool-----570

f. Reservoir Surface (acres)

- (1) Recreation pool-----100±
- (2) Spillway crest----- 100±
- (3) Top Dam-----100±
- (4) Flood-control pool----- N/A
- (5) Test flood pool-----103±

g. Dam

- (1) Type-----gravity, stone, concrete, earth
- (2) Length-----15'
- (3) Height-----6'±
- (4) Top Width-----15'
- (5) Side Slopes-----vertical U.S. and D.S.
- (6) Zoning-----actual interior unknown
- (7) Impervious Core-----concrete wall on upstream face
- (8) Cutoff-----none
- (9) Grout curtain-----none

h. Diversion and Regulating Tunnel -----none

i. Spillway

- (1) Type (entire dam acts as spillway)-----broad crest
- (2) Length of weir-----15'
- (3) Crest elevation-----417
- (4) Gates---(1'x1.5' sluice box, 6" stop log provision)
- (5) U/S Channel -----none
- (6) D/S Channel-----Spillway chute 2' wide for  
10' downstream of stop log

j. Regulating Outlets

The regulating outlet for this dam consists of a 2 foot wide by 5 foot deep, 10± foot long concrete spillway chute. As previously described, a 2' by 2' wooden slide gate, covering a 1.5 x 1 foot opening, is set in 3" angle iron guides at the upstream base of the spillway. Apparently the gate could be operated manually,

but normal procedure appears to be to leave it in place. In addition the spillway chute has provisions for a 6 inch stop log, which can be used to raise the level of the lake to the top of the embankment. The upstream invert elevation of the spillway chute is 412<sub>+</sub>. The elevation of the earth embankment is 417<sub>+</sub>.

SECTION 2  
ENGINEERING DATA

2.1 Design

There were no records discovered indicating by whom and when the structure was designed. Indepth engineering calculations appear to be non-existant.

2.2 Construction

No construction data regarding the dam was discovered.

2.3 Operation

No operational manual for the dam exists.

2.4 Evaluation

a. Availability

No plans or design calculations were discovered. State Inspection Reports of the years 1972, 1975, and 1977 were made available at the Department of Environmental Quality Engineering, Division of Waterways, Boston office.

b. Adequacy

The lack of indepth engineering data does not allow for a definitive review. Therefore the adequacy of this dam, structurally and hydraulically, can not be assessed from the standpoint of review of design calculations, but must be based primarily on the visual inspection, past performance history and sound engineering judgement.

c. Validity

The field investigation indicates that the external features substantially agree with those shown on the 1972 State Inspection Report sketch.

*Leverett Pond*



SECTION 3  
VISUAL INSPECTION

3.1 Findings

a. General

The dam, Leverett Pond, was field inspected on November 27, 1978. At that time, the water upstream of the concrete apron had begun to freeze at the surface for approximately 4" below the top of the apron. Some small quantity of water was trickling through the spillway chute. The spillway chute was full of debris and a large mound of debris was sitting on top of the left side of the dam.

b. Dam

The dam consists of an earthfill structure with an upstream concrete face. The structure was built in what appears to be a bedrock low about 20 feet wide. A concrete spillway chute passes through the earth fill at the approximate center of the dam. A general view of the dam is shown in photo 4. The dam abutments consist of bedrock.

Erosion of the earth fill due to overtopping has occurred next to the spillway chute walls. This erosion is more severe at the downstream end of the right spillway chute wall. Photo 1 shows the eroded areas next to the spillway chute walls. Photo 2 shows the erosion channel formed in the earth fill adjacent to the right spillway wall.

A clump of three maple trees growing next to the left spillway chute wall is shown in photo 4.

A sketch of the dam from a previous inspection report, dated June 15, 1972, indicates a 5 to 6 foot high stone masonry wall at the downstream face of the dam. Severe erosion of the soil on the upstream side of this wall has occurred as shown in photo 5. It appears as if a portion of the upstream face of the stone wall near the spillway chute has been exposed as a result of erosion of the earth behind it, and the stones which formed the wall have toppled, as shown in photos 3 and 5.

c. Appurtenant Structures

At the time of inspection, the spillway chute was partially filled with debris as shown in photo 1. A large pile of debris existed on top of the dam immediately to the left of the spillway chute as shown in photo 8. This debris prevented visual observation of the sluiceway gate and the stop log provision area. No stop logs were in place at that time.

The condition shown by photos 1 and 2, indicate that the concrete chute was probably originally poured directly into the fill embankment. Erosion of fill has since separated the concrete from the fill. The general condition of the surface concrete appeared to be good with some minor spalling.

The upstream concrete apron shown in photos 8 and 9 were partially covered by frozen debris and water. The general condition of the surface concrete which could be observed was good.

d. Reservoir Area

The immediate reservoir area appeared to be relatively shallow containing some marsh vegetation. The visual inspection showed the overall reservoir area to be in general agreement with the U.S.G.S. map. A description of the drainage area is given in Section 1.3.a of this report. The amount of siltation in the reservoir is not known.

e. Downstream Channel

The downstream channel as viewed from the dam is shown in photo 3. Numerous trees line the downstream channel and several dead trees have fallen across the channel.

3.2 Evaluation

Visual inspection of the dam indicates the dam is in poor condition. This dam has been inspected by the Massachusetts Department of Public Works in 1972, and 1977. The March 1977 inspection Report summarized the overall condition as "conditionally safe--major repairs needed." In a letter to the owner dated October 31, 1977, the Massachusetts Division of Waterways expressed concern with the "structural integrity and physical condition" of the dam.

Comparing the condition of the dam as described in the earlier inspection reports with the visual examination made during this inspection, it appears that the degree of erosion of the earthfill is continuing to increase and the present condition of the dam is poor.

SECTION 4  
OPERATIONAL PROCEDURES

4.1 Procedures

No formal operational procedure is performed on this structure. There is some question as to who dictates the level of the pond.

4.2 Maintenance of Dam

The dam is maintained by the caretaker provided by the private owner. Our visual inspection of the dam indicated that little or no maintenance has been performed on the structure over the last several years.

4.3 Maintenance of Operating Facility

There is no formal operational procedure for the dam. According to the 1975 State Inspection Report, some unknown person places boards or stop logs across the notch of the dam. This results in a raising of the pond level by about 6 inches and stops the flow of the brook. The caretaker has removed such obstructions several times in recent years.

4.4 Description of Warning Systems

There are no warning systems associated with this dam.

4.5 Evaluation

There is no formal maintenance program for the structure or the operating facilities. Our visual inspection revealed that trash blocks the spillway. Removal of debris and periodic maintenance should be performed by the caretaker on a regular basis. Although the dam is low hazard regarding failure it should be inspected annually by qualified personnel who

can identify areas of concern which if left unchecked could jeopardize the safety of the dam.

SECTION 5  
HYDRAULIC/HYDROLOGIC

5.1 Evaluation of Features

a. General

The dam at Leverett Pond is placed in a narrow outlet valley for a swamp-pond area. The dam is a 6-8 foot high concrete, stone masonry and earthen structure founded on rock. It impounds water for recreational use. The top of the dam (about 15 feet wide) acts as a spillway whenever enough water is impounded and is able to overflow. There is an outlet opening (1.5 x 1 foot) at the base of the dam, with stop log control at the crest. The outlet openings functionality is not known. The pond collects runoff from a 442 acre drainage area and could store about 525 a-f of water. The exact depth of the pond is not known.

b. Design Data

No design data for the dam is available. It appears that a convenient site for impounding water was located and the dam was built.

c. Experience Data

It appears that the dam was used for recreational purposes with summer homes that have been converted for year-round use. No operational or hydrologic records were kept.

e. Overtopping Potential

Due to the dam's small size and low hazard potential, a 100 year storm was used as the test flood. Data was obtained

from USDA-SC-TR 55 for a 100 year, 24 hour type II storm. This storm produced 6.5 inches of rainfall and 3.21 inches of runoff. The inflow is 517 cfs. The maximum outflow at the dam (with allowance for storage) is 15 cfs. This flow would overflow the top of the dam by about 0.4 feet. The entire dam acts as an overflow spillway with the  $1\frac{1}{2}' \times 1'$  outlet closed. If this outlet were functioning and the pond level lowered, considering the ponds storage capacity, the spillway chute could handle the 100 year storm runoff.

f. Dam Failure Analysis

Due to the size (6-8 feet high, 15 feet long, 15 feet wide) and materials used (concrete, stone, earth) failure of this dam from overtopping does not seem likely. If some event occurred and caused a complete failure with water at the top of dam, the outflow would be 282 cfs. Adding this to the base flow from adjacent drainage area indicates a flow of about 800 cfs.

Water would travel towards Montague Road. The land between the dam and Montague Road is an undeveloped, wooded, swampy area. Two houses occur at Montague Road. It appears that minor flooding, 1 to 2 feet deep, would occur near both houses. The stream stage just before Montague Road is elevation 398.75, about 5 feet deep. Beyond Montague Road is a large undeveloped opened flood plain area which will dissipate the outflow.

If the dam were to fail, without runoff from additional areas being considered, no damage due to flooding appears likely from the 282 cfs outflow. In both cases, loss of life does not seem likely to occur.

SECTION 6  
STRUCTURAL STABILITY

6.1 Evaluation of Structural Stability

a. Visual Observations

The visual observations did not disclose any immediate stability problems. Continuing erosion of soil next to the spillway chute walls and next to the stone wall at the downstream end of the dam may lead to instability of the dam.

b. Design and Construction Data

No design or construction data are available. Therefore, the evaluation of the structural stability must be based primarily on the information from the visual inspection.

c. Operating Records

Operating records were not made available.

d. Post-Constructuion Changes

An inspection report dated June 15, 1972, by the Massachusetts Department of Public Works indicates that the concrete upstream face was added after the initial dam construction.

e. Seismic Stability

The dam is located in Seismic Zone 2 according to USCE guidelines and does not require special analysis for seismic stability.



## SECTION 7

### ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES

#### 7.1 Dam Assessment

##### a. Condition

The visual inspection indicates that the dam is in poor condition.

##### b. Adequacy of Information

The information available is such that the assessment of the safety of the dam must be based primarily on the visual inspection, past history and engineering judgement.

##### c. Urgency

The recommendations presented in Sections 7.2 and 7.3 should be implemented within one year after receipt of this Phase I Inspection Report by the owner.

##### d. Necessity of Additional Investigations

The findings of the visual inspection do not warrant additional investigations. However, the owner should engage a qualified engineer to design adequate repairs to the dam.

#### 7.2 Recommendations

This dam in effect acts as a full width spillway. As this dam is now operated, water can be expected to flow over the crest frequently. Therefore the owner should engage a qualified engineer to design adequate repairs for the downstream eroded areas at the spillway chute and the dam embankment. These repairs should be such that future erosion will be prevented. These areas are shown in photos 1 and 2.

### 7.3 Remedial Measures

#### a. Operating and Maintenance Procedures

- (1) Trees adjacent to the left wall of the spillway chute should be removed.
- (2) Debris in the spillway chute and top of the dam should be removed as part of routine maintenance.
- (3) This dam should be inspected annually by qualified personnel who can identify areas of concern which, if left unchecked could jeopardize the safety of the dam.

### 7.4 Alternatives

Not applicable to this dam.

APPENDIX A  
INSPECTION CHECKLIST

VISUAL INSPECTION CHECK LIST  
PARTY ORGANIZATION

PROJECT Leverett Pond DATE Nov . 27  
TIME 1:00 PM  
WEATHER cloudy 25°  
W.S. ELEV. 416.5+ U.S.        DN.S.       

PARTY:

1. <u>Ron. H. Cheney</u>	<u>H H &amp; B</u>	6. <u>                    </u>
2. <u>David Vine</u>	<u>H H &amp; B</u>	7. <u>                    </u>
3. <u>Daniel P. LaGatta</u>	<u>GEI</u>	8. <u>                    </u>
4. <u>Tom Keller</u>	<u>GEI</u>	9. <u>                    </u>
5. <u>                    </u>		10. <u>                   </u>

PROJECT FEATURE	INSPECTED BY	REMARKS
1. <u>Earth and Stone Fill Embankments</u>	<u>Daniel P. LaGatta</u>	
2. <u>Concrete Spillway</u>	<u>Ron H. Cheney</u>	
3. <u>                    </u>		
4. <u>                    </u>		
5. <u>                    </u>		
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8. <u>                    </u>		
9. <u>                    </u>		
10. <u>                   </u>		

# PERIODIC INSPECTION CHECKLIST

PROJECT Leverett Pond DATE Nov. 27, 1978  
 PROJECT FEATURE Earthfill/ Concrete Dam NAME Ron H. Cheney  
 DISCIPLINE Structural Engineer NAME Daniel P. LaGatta  
Geotechnical Engineer

AREA EVALUATED	CONDITION
<u>DAM EMBANKMENT</u>	
Crest Elevation	417'+
Current Pool Elevation	416.5'+
Maximum Impoundment to Date	unknown
Surface Cracks	None observed.
Pavement Condition	No pavement.
Movement or Settlement of Crest	None observed.
Lateral Movement	None observed.
Vertical Alignment	No vertical misalignment observed.
Horizontal Alignment	No horizontal misalignment observed.
Condition at Abutment and at Concrete Structures	Good.
Indications of Movement of Structural Items on Slopes	None observed.
Trespassing on Slopes	Not significant
Sloughing or Erosion of Slopes or Abutments	Erosion next to walls of spillway chute; erosion upstream of stone pile.
Rock Slope Protection - Riprap Failures	Not applicable.
Unusual Movement or Cracking at or Near Toes	Erosion of toe; dry stone masonry wall (formally downstream face) toppled.
Unusual Embankment or Downstream Seepage	None observed.
Piping or Boils	None observed.
Foundation Drainage Features	None observed.
Toe Drains	None.
Instrumentation System	None.
Vegetation	Trees and brush near dam but are not menacing except for those immediately adjacent to concrete structure.

PROJECT Leverett PondDATE Nov. 27, 1978PROJECT FEATURE Inlet Structure and ApronNAME Ron H. CheneyDISCIPLINE Structural EngineerNAME Daniel P. LaGattaGeotechnical Engineer

AREA EVALUATED	CONDITIONS
<p><u>OUTLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE</u></p> <p>a. Approach Channel</p> <p>Slope Conditions</p> <p>Bottom Conditions</p> <p>Rock Slides or Falls</p> <p>Log Boom</p> <p>Debris</p> <p>Condition of Concrete Lining</p> <p>Drains or Weep Holes</p> <p>b. Intake Structure</p> <p>Condition of Concrete</p> <p>Stop Logs and Slots</p>	<p>There is no approach channel. There is a stepped concrete apron upstream of the stop log area. Frozen water to within 6 inches of the top of the apron impeded inspection of this facility. The condition of the surface concrete appeared to be good with only minor spalling.</p> <p>The intake-outlet structures are the sluiceway gate and the stop logs. The sluiceway gate could not be observed during this inspection due to frozen debris blocking the chute. There were no stop logs in place during the inspection. Frozen debris in the stop log provision area impeded inspection of this facility</p>

# PERIODIC INSPECTION CHECK LIST

PROJECT Leverett Pond DATE Nov. 27, 1978  
 PROJECT FEATURE Spillway Chute NAME Ron H. Cheney  
 DISCIPLINE Structural Engineer NAME Daniel P. LaGatta  
Geotechnical Engineer

AREA EVALUATED	CONDITIONS
<p><u>OUTLET WORKS - TRANSITION AND CONDUIT</u></p> <p>General Condition of Concrete</p> <p>Rust or Staining on Concrete</p> <p>Spalling</p> <p>Erosion or Cavitation</p> <p>Cracking</p> <p>Alignment of Monoliths</p> <p>Alignment of Joints</p> <p>Numbering of Monoliths</p>	<p>There is a concrete chute downstream of the inlet structure. The general condition of the surface concrete was good with some spalling. Frozen debris lined the chute floor. Erosion of fill adjacent to the spillway created a void of several inches between the concrete and the fill.</p>

# PERIODIC INSPECTION CHECK LIST

PROJECT Leverett Pond

DATE Nov. 27, 1978

PROJECT FEATURE. Outlet Channel and Structure

NAME Ron H. Cheney

DISCIPLINE Structural Engineer

NAME Daniel P. LaGatta

Geotechnical Engineer

AREA EVALUATED	CONDITIONS
<u>OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL</u>	
General Condition of Concrete	The inlet-outlet structure is the sluice gate and stop logs previously discussed.
Rust or Staining	
Spalling	
Erosion or Cavitation	
Visible Reinforcing	
Any Seepage or Efflorescence	
Condition at Joints	
Drain Holes	None observed.
Channel	Filled with debris.
Loose Rock or Trees Overhanging Channel	None of significance.
Condition of Discharge Channel	Not entirely visible due to debris.



# PERIODIC INSPECTION CHECK LIST

PROJECT Leverett Pond

DATE Nov. 27, 1978

PROJECT FEATURE Spillway

NAME Ron H. Cheney

DISCIPLINE Structural Engineer

NAME Daniel P. LaGatta

Geotechnical Engineer

## AREA EVALUATED

## CONDITIONS

### OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS

#### a. Approach Channel

General Condition

Loose Rock Overhanging Channel

Trees Overhanging Channel

Floor of Approach Channel

#### b. Weir and Training Walls

General Condition of Concrete

Rust or Staining

Spalling

Any Visible Reinforcing

Any Seepage or Efflorescence

Drain Holes

#### c. Discharge Channel

General Condition

Loose Rock Overhanging Channel

Trees Overhanging Channel

Floor of Channel

Other Obstructions

The spillway is comprised of the inlet-outlet structure, the sluice gate, the stop log facility and the chute, all were previously described. At high water level entire top of dam acts as a spillway.

The discharge channel is the outlet channel.

# PERIODIC INSPECTION CHECK LIST

PROJECT Leverett Pond

DATE Nov. 27, 1978

PROJECT FEATURE Spillway

NAME Ron H. Cheney

DISCIPLINE Structural Engineer

NAME Daniel P. LaGatta

Geotechnical Engineer

AREA EVALUATED	CONDITIONS
OUTLET WORKS - CONTROL TOWER	
a. Concrete and Structural	
General Condition	
Condition of Joints	
Spalling	
Visible Reinforcing	
Rusting or Staining of Concrete	
Any Seepage or Efflorescence	
Joint Alignment	
Unusual Seepage or Leaks in Gate Chamber	
Cracks	
Rusting or Corrosion of Steel	
b. Mechanical and Electrical	
Air Vents	
Float Wells	
Crane Hoist	
Elevator	
Hydraulic System	
Service Gates	
Emergency Gates	
Lightning Protection System	
Emergency Power System	
Wiring and Lighting System in Gate Chamber	
	There is no control tower for this facility.
	Operation of the slide gate and installation of the stop log is performed manually. Both facilities were inoperable during the inspection due to blockage from frozen debris.

# PERIODIC INSPECTION CHECK LIST

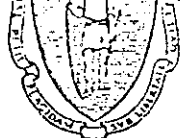
PROJECT Leverett Pond DATE Nov. 27, 1978  
 PROJECT FEATURE Service Bridge NAME Ron H. Cheney  
 DISCIPLINE Structural Engineer NAME Daniel P. LaGatta  
Geotechnical Engineer

AREA EVALUATED	CONDITIONS
<p><u>OUTLET WORKS - SERVICE BRIDGE</u></p> <p>a. Super Structure</p> <p style="padding-left: 20px;">Bearings</p> <p style="padding-left: 20px;">Anchor Bolts</p> <p style="padding-left: 20px;">Bridge Seat</p> <p style="padding-left: 20px;">Longitudinal Members</p> <p style="padding-left: 20px;">Under Side of Deck</p> <p style="padding-left: 20px;">Secondary Bracing</p> <p style="padding-left: 20px;">Deck</p> <p style="padding-left: 20px;">Drainage System</p> <p style="padding-left: 20px;">Railings</p> <p style="padding-left: 20px;">Expansion Joints</p> <p style="padding-left: 20px;">Paint</p> <p>b. Abutment and Piers</p> <p style="padding-left: 20px;">General Condition of Concrete</p> <p style="padding-left: 20px;">Alignment of Abutment</p> <p style="padding-left: 20px;">Approach to Bridge</p> <p style="padding-left: 20px;">Condition of Seat and Backwall</p>	<p>There is no service bridge for this facility.</p>

APPENDIX B  
ENGINEERING DATA

LIST OF AVAILABLE ENGINEERING DATA

No engineering data was available for this dam.



EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL QUALITY ENGR.  
DIVISION OF WATERWAYS

*100 Nashua Street, Boston 02114*

May 13, 1977

Mrs. Lucille W. Lewis  
Main Street  
Wendall, Massachusetts

Re: Insp. Dam #2-6-154-1  
Leverett Pond Dam  
Leverett

Dear Mrs. Lewis:

On 3-24-77, an Engineer from the Massachusetts Department of Public Works made a visual inspection of the above dam. Our records indicate the owner to be Lucille W. Lewis. If this information is incorrect, will you please notify this office.

The inspection was made in accordance with the provisions of Chapter 253 of the Massachusetts General Laws as amended (Dams Safety Act). Chapter 706 of the Acts of 1975 transferred the jurisdiction of the so-called "Dams Safety Program" to the Commissioner of the Department of Environmental Quality Engineering.

The results of the inspection indicate that this dam is conditionally safe. The following conditions were noted that require attention:

Old washouts still evident. Easterly one still eroding from present over-topping. Top and downstream slope on easterly side of dam being eroded. Minor unraveling of concrete apron on southeasterly end of dam. Minor cracks in top of walls.

We call these conditions to your attention before they become serious and more expensive to correct. With any correspondence please include the number of the dam as indicated above.

Very truly yours,

John F. Hannon, P.E.  
Chief Engineer

AM:

cc: F.Y. Hoey  
H.T. Shumway  
Mr. Gregg Woodward (Caretaker)  
Montague Rd.  
Leverett, Massachusetts

## INSPECTION REPORT - DAMS AND RESERVOIRS

1. LOCATION:

City/Town Leverett . County Franklin . Dam No. 2-6-154-1

Name of Dam Leverett Pond Dam

Mass. Rect.

Topo Sheet No. 11 B . Coordinates: N 534,000 , E 328,700 .

Date \_\_\_\_\_

Inspected by: Harold T. Shumway, On March 24, 1977. Last Inspection 3-6-75

(2) OWNER/S: As of March 24, 1977

per: Assessors x , Reg. of Deeds , Prev. Insp. x , Per. Contact x

1.	Mrs. Lucille W. Lewis, Main Street, Wendell, Mass.	617-544-6317
	Name	St. & No.
		City/Town
		State
		Tel. No.

2. \_\_\_\_\_

Name	St. & No.	City/Town	State	Tel. No
------	-----------	-----------	-------	---------

3. _____				
Name	St. & No.	City/Town	State	Tel. No.

3. CARETAKER: (if any) e.g. superintendent, plant manager, appointed by absentee owner, appointed by multi owners.

Name	St. & No.	City/Town	State	Tel. No
Mr. Gregg L. Woodard	Montague Road	Leverett	Mass.	

4. DATA:

No. of Pictures Taken None. Sketches See description of Dam.  
Plans, Where None located.

5. DEGREE OF HAZARD: (if dam should fail completely)\*

1. Minor \_\_\_\_\_ .                      3. Severe X \_\_\_\_\_ .

2. Moderate\_\_\_\_\_

Comments: Approx. 133 million gallons impoundment-could cause severe damage in area of Tewaddle Hill Road and Cushman Road.

\*This rating may change as land use changes (future development).

6.

## OUTLETS: OUTLET CONTROLS AND DRAWDOWN

Center of dam-2'W.X1½'H. concrete spillway with 4½'high  
 No. 1 Location and Type: dropwall and concrete chute.

Provisions for a 6" high stoplog-none in place at  
 Controls Yes, TYPE: time of inspection.

Automatic       . Manual X. Operative Yes       , No X.

Comments: No stoplog evident on day of inspection-water over topping  
easterly abutment.

No. 2 Location and Type: Base of spillway-1'H.X1½'W. concrete box sluice.

Controls Yes, Type: Wood slidegate set in 3" angle iron guides.

Automatic       . Manual X. Operative Yes X, No       .

Comments: Gate appears to be sound and in working order.

No. 3 Location and Type:       

Controls       , Type:       

Automatic       . Manual       . Operative Yes       , No       .

Comments:       

Drawdown present Yes X, No       . Operative Yes X, No       .

Comments: See item #2 above.

7.

DAM UPSTREAM FACE: Slope Vertical, Depth Water at Dam 5'.

Material: Turf       . Brush & Trees       . Rock fill       . Masonry       . Wood       

Other Concrete and stone masonry wall.

Condition: 1. Good       .

3. Major Repairs       .

2. Minor Repairs X.

4. Urgent Repairs       .

Comments: Top of dam on So. Easterly side shows minor erosion from over topping  
Area over topped by ¼' of water flow on day of inspection-subgrade  
appears to be a rock shale which would erode very slowly.

8.

DAM DOWNSTREAM FACE: Slope Verticle at dropwall.

Material: Turf X. Brush & Trees       . Rock Fill X. Masonry       . Wood       

Other Concrete and stone masonry wall

Condition: 1. Good       .

3. Major Repairs       .

2. Minor Repairs X.

4. Urgent Repairs       .

Comments: Ends of spillway chute side walls show minor unraveling. Earth fill,  
buttressing so. easterly chute sidewall slowly eroding from over topp  
of dam on day of inspection-minor unraveling of concrete apron on sot



9. EMERGENCY SPILLWAY: Available Yes. Needed \_\_\_\_\_.

Height Above Normal Water:  $\frac{1}{2}$  Ft.

Width 20 Ft. Height 20<sup>±</sup> Ft. Material Ledge and concrete.

Condition: 1. Good \_\_\_\_\_.

3. Major Repairs \_\_\_\_\_.

2. Minor Repairs x.

4. Urgent Repairs \_\_\_\_\_.

Comments: Entire top of dam structure and abutting ledge face would serve as overflow spillway in emergency. See item #8 for condition of this area.

10. WATER LEVEL AT TIME OF INSPECTION:  $\frac{3}{4}$  Ft. Above x. Below \_\_\_\_\_.

Top Dam \_\_\_\_\_ F.L. Principal Spillway x.

Other \_\_\_\_\_

Normal Freeboard  $\frac{1}{2}$  Ft.

11. SUMMARY OF DEFICIENCIES NOTED:

Growth (Trees and Brush) on Embankment None found.

Animal Burrows and Washouts Old washouts still evident-easterly one still eroding from present over topping.

Damage to Slopes or Top of Dam Top and downstream slope on easterly side of dam being eroded.

Cracked or Damaged Masonry Minor unraveling of concrete apron on south easterly end of dam-minor cracks in top of concrete walls.

Evidence of Seepage None found.

Evidence of Piping None found.

Leaks None found.

Erosion See damage to slopes or top of dam above.

Trash and/or Debris Impeding Flow None found.

Clogged or Blocked Spillway None found.

Other \_\_\_\_\_

(12.)

## OVERALL CONDITION:

1. Safe \_\_\_\_\_.
2. Minor repairs needed \_\_\_\_\_.
3. Conditionally safe - major repairs needed X \_\_\_\_\_.
4. Unsafe \_\_\_\_\_.
5. Reservoir impoundment no longer exists (explain)  
Recommend removal from inspection list \_\_\_\_\_.

(13.)

## REMARKS AND RECOMMENDATIONS: (Fully Explain)

See items Nos. 7, 8, and 11 for areas noted that appear in need of attention and repairs. The entire dam from spillway chute south easterly to abutting ledge outcrop was being over topped on day of inspection to a depth of 2 to 3 inches. The spillway chute was clear of any debris and over flowing from water runoff. area being over topped shows minor erosion from the concrete face wall downstream end of spillway chute. At the end of the chute sidewalls a small wash out of back fill has occurred. It appears that at one time a concrete apron or cap covered part of the area now being over topped and eroded but over the years a large portion of this cap has unravelled.

The main spillway structure and concrete upstream facewall appeared to be basically sound and safe at time of inspection.

Mrs. Lucille W. Lewis, owner of this dam, was contacted by telephone on March 25, 1977, at 4:00 P.M. and informed of the conditions found at the dam site this inspection. She was also informed of her responsibilities as owner of this dam. She stated that she would have her caretaker check into the situation immediately.

HTS/at

## INSPECTION REPORT - DAMS AND RESERVOIRS

① LOCATION:

City/Town Leverett . County Franklin . Dam No. 2-6-154-1

Name of Dam Leverett Pond Dam  
Mass. Rect.

Topo Sheet No. 11 B . Coordinates: N 534,000 , E 328,700 .

Inspected by: Harold T. Shumway, On March 24, 1977. Date 3-6-75 Last Inspection

2. OWNER/S: As of March 24, 1977

per: Assessors x, Reg. of Deeds           , Prev. Insp. x, Per. Contact x

1.	Mrs. Lucille W. Lewis	Main Street, Wendell, Mass.	617-544-6317
	Name	St. & No.	City/Town State Tel. No

2. _____				
Name	St. & No.	City/Town	State	Tel. No.

[illegible]

3. CARETAKER: (if any) e.g. superintendent, plant manager, appointed by absentee owner, appointed by multi owners.

Name	St. & No.	City/Town	State	Tel. N
Mr. Gragg L. Woodward	Montague Road	Leverett	Mass.	

4. DATA:

No. of Pictures Taken None. Sketches See description of Dam.  
Plans, Where None located.

5. DEGREE OF HAZARD: (if dam should fail completely)\*

1. Minor \_\_\_\_\_.

3. Severe X

2. Moderate

4. Disastrous \_\_\_\_\_

Comments: Approx. 133 million gallons impoundment--could cause severe damage in area of Tewaddle Hill Road and Cushman Road.

\*This rating may change as land use changes (future development).

October 31, 1977

Mrs. Lucille W. Lewis  
Main Street  
Wendell, Massachusetts

RE: Inspection Dam #2-6-154-1  
Leverett Pond Dam  
Leverett

Dear Mrs. Lewis:

Reference is made to a recent telephone inquiry from Representative Thomas Simons concerning maintenance work at the above referenced dam.

Please be advised that we are concerned with the structural integrity and physical condition of that dam. As owner of that facility, you are responsible for it and any associated liability should the dam fail and cause personal property damage to abutters downstream.

Representative Simons mentioned that a cooperative maintenance activity had or has been agreed upon by you and the Leverett Pond Association relative to correcting the deficiencies reported in our memorandum dated May 13, 1977. If that is the case, the corrective work should be initiated as soon as possible. We are not concerned with who performs the work; that is, the owner or the Association, but are concerned that the work progress timely and properly.

If we may be of further assistance, please contact me in Boston at 727-4796.

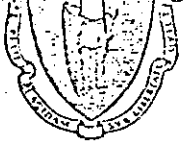
Thank you for your assistance in resolving this matter.

Very truly yours,



John J. Hannon, P.E.  
Chief Engineer

JJH:hlb  
cc:Rep. Thomas Simons  
F.J.Hoey, Dist. Hwy Engr.  
H.T.Shumway, Dams Engr.  
Mr. Gregg Woodward (Caretaker)



EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL QUALITY ENGR.  
DIVISION OF WATERWAYS

*100 Nashua Street, Boston 02114*

May 13, 1977

Mrs. Lucille W. Lewis  
Main Street  
Wendall, Massachusetts

Re: Insp. Dam #2-6-154-1  
Leverett Pond Dam  
Leverett

Dear Mrs. Lewis:

On 3-24-77, an Engineer from the Massachusetts Department of Public Works made a visual inspection of the above dam. Our records indicate the owner to be Lucille W. Lewis. If this information is incorrect, will you please notify this office.

The inspection was made in accordance with the provisions of Chapter 253 of the Massachusetts General Laws as amended (Dams Safety Act). Chapter 706 of the Acts of 1975 transferred the jurisdiction of the so-called "Dams Safety Program" to the Commissioner of the Department of Environmental Quality Engineering.

The results of the inspection indicate that this dam is conditionally safe. The following conditions were noted that require attention:

Old washouts still evident. Easterly one still eroding from present over-topping. Top and downstream slope on easterly side of dam being eroded. Minor unraveling of concrete apron on southeasterly end of dam. Minor cracks in top of walls.

We call these conditions to your attention before they become serious and more expensive to correct. With any correspondence please include the number of the dam as indicated above.

Very truly yours,

John V. Hannon, P.E.  
Chief Engineer

AM:

cc: F.Y. Hoey  
H.T. Shumway  
Mr. Gregg Woodward (Caretaker)  
Montague Rd.  
Leverett, Massachusetts

## INSPECTION REPORT - DAMS AND RESERVOIRS

## 1. LOCATION:

City/Town Leverett County Franklin Dam No. 2-6-154-3Name of Dam Leverett Pond Dam

Mass. Rect.

Topo Sheet No. 11 B Coordinates: N 534,000 , E 328,700

Date

Inspected by: Harold T. Shumway , On March 24, 1977 . Last Inspection 3-6-752. OWNER/S: As of March 24, 1977per: Assessors X , Reg. of Deeds \_\_\_\_\_ , Prev. Insp. X , Per. Contact X1. Mrs. Lucille M. Lewis, Main Street, Wendell, Mass. 617-544-6317  
Name St. & No. City/Town State Tel. No.2. \_\_\_\_\_  
Name St. & No. City/Town State Tel. No.3. \_\_\_\_\_  
Name St. & No. City/Town State Tel. No.3. CARETAKER: (if any) e.g. superintendent, plant manager, appointed by  
absentee owner, appointed by multi owners.Mr. Gregg L. Woodard, Montague Road, Leverett, Mass.  
Name St. & No. City/Town State Tel. No.

## 4. DATA:

No. of Pictures Taken None . Sketches See description of Dam.Plans, Where None located.

## 5. DEGREE OF HAZARD: (if dam should fail completely)\*

1. Minor \_\_\_\_\_.

3. Severe X \_\_\_\_\_.

2. Moderate \_\_\_\_\_.

4. Disastrous \_\_\_\_\_.

Comments: Approx. 133 million gallons impoundment—could cause severe damage in  
area of Tewaddle Hill Road and Cushman Road.

\*This rating may change as land use changes (future development).

6. OUTLETS: OUTLET CONTROLS AND DRAWDOWN

Center of dam-2'W.X1½'H. concrete spillway with 4½'high  
No. 1 Location and Type: dropwall and concrete chute.

Provisions for a 6" high stoplog-none in place at  
Controls yes, TYPE: line of inspection.

Automatic\_\_\_\_. Manual x. Operative Yes\_\_\_\_, No x.

Comments: No stoplog evident on day of inspection-water over topping  
easterly abutment.

No. 2 Location and Type: Base of spillway-1'H.X1½'W. concrete box sluice.

Controls yes, Type: Wood slidegate set in 3" angle iron guides.

Automatic\_\_\_\_. Manual x. Operative Yes x, No\_\_\_\_.

Comments: Gate appears to be sound and in working order.

No. 3 Location and Type: \_\_\_\_\_

Controls\_\_\_\_, Type: \_\_\_\_\_

Automatic\_\_\_\_. Manual\_\_\_\_. Operative Yes\_\_\_\_, No\_\_\_\_.

Comments: \_\_\_\_\_

Drawdown present Yes x, No\_\_\_\_. Operative Yes x, No\_\_\_\_.

Comments: See item #2 above.

7. DAM UPSTREAM FACE: Slope Vertical, Depth Water at Dam 5'.

Material: Turf\_\_\_\_. Brush & Trees\_\_\_\_. Rock fill\_\_\_\_. Masonry\_\_\_\_. Wood\_\_\_\_

Other Concrete and stone masonry wall.

Condition: 1. Good\_\_\_\_.

3. Major Repairs\_\_\_\_.

2. Minor Repairs x.

4. Urgent Repairs\_\_\_\_.

Comments: Top of dam on So. Easterly side shows minor erosion from over topping  
Area over topped by ¼' of water flow on day of inspection-subgrade  
appears to be a rock shale which would erode very slowly.

8. DAM DOWNSTREAM FACE: Slope Vertical at dropwall.

Material: Turf x. Brush & Trees\_\_\_\_. Rock Fill x. Masonry\_\_\_\_. Wood\_\_\_\_

Other Concrete and stone masonry wall

Condition: 1. Good\_\_\_\_.

3. Major Repairs\_\_\_\_.

2. Minor Repairs x.

4. Urgent Repairs\_\_\_\_.

Comments: Ends of spillway chute side walls show minor unraveling. Earth fill  
buttressing so. easterly chute sidewall slowly eroding from over top  
of concrete apron on so. easterly side of spillway.

9. EMERGENCY SPILLWAY: Available Yes. Needed       .

Height Above Normal Water: 1/2 Ft.

Width 20 Ft. Height 20<sup>±</sup> Ft. Material Ledge and concrete

Condition: 1. Good       . 3. Major Repairs       .

2. Minor Repairs X. 4. Urgent Repairs       .

Comments: Entire top of dam structure and abutting ledge face would serve as overflow spillway in emergency. See item #8 for condition of this area.

30. WATER LEVEL AT TIME OF INSPECTION: 3/4 Ft. Above X. Below       .

Top Dam        F.L. Principal Spillway X.

Other       

Normal Freeboard 1/2 Ft.

11. SUMMARY OF DEFICIENCIES NOTED:

Growth (Trees and Brush) on Embankment None found.

Animal Burrows and Washouts Old washouts still evident-easterly one still eroding from present over topping.

Damage to Slopes or Top of Dam Top and downstream slope on easterly side of dam being eroded.

Cracked or Damaged Masonry Minor unraveling of concrete apron on south easterly end of dam-minor cracks in top of concrete walls.

Evidence of Seepage None found.

Evidence of Piping None found.

Leaks None found.

Erosion See damage to slopes or top of dam above.

Trash and/or Debris Impeding Flow None found.

Clogged or Blocked Spillway None found.

Other



(12)

## OVERALL CONDITION:

1. Safe \_\_\_\_\_
2. Minor repairs needed \_\_\_\_\_
3. Conditionally safe - major repairs needed X \_\_\_\_\_
4. Unsafe \_\_\_\_\_
5. Reservoir impoundment no longer exists (explain)  
Recommend removal from inspection list \_\_\_\_\_

(13)

## REMARKS AND RECOMMENDATIONS: (Fully Explain)

See items Nos. 7, 8, and 11 for areas noted that appear in need of attention and repairs. The entire dam from spillway chute south easterly to abutting ledge outcrop was being over topped on day of inspection to a depth of 2 to 3 inches. The spillway chute was clear of any debris and over flowing from water runoff. The area being over topped shows minor erosion from the concrete face wall downstream end of spillway chute. At the end of the chute sidewalls a small wash out of back fill has occurred. It appears that at one time a concrete apron or cap covered part of the area now being over topped and eroded but over the years a large part of this cap has unravelled.

The main spillway structure and concrete upstream facewall appeared to be basically sound and safe at time of inspection.

Mrs. Lucille W. Lewis, owner of this dam, was contacted by telephone on March 25, 1977, at 4:00 P.M. and informed of the conditions found at the dam site this inspection. She was also informed of her responsibilities as owner of this dam. She stated that she would have her caretaker check into the situation immediately.

April 7, 1975

Mr. Bradford H. Lewis  
Montague Road  
Leverett, Mass.

RE: Inspection-Dam #2-6-154-1  
Leverett  
Leverett Pond Dam

Dear Mr. Lewis:

On March 6, 1975, an engineer from the Massachusetts Department of Public Works made a visual inspection of the above dam. Our records indicate that you are the designated caretaker for your mother Mrs. Lucille W. Lewis of Main Street, Wendell, Massachusetts. Will you please notify this office if this information is not current.

The inspection was made in accordance with Chapter 253 of the Massachusetts General Laws, as amended by Chapter 595 of the Acts of 1970 (Dams-Safety Act).

The results of the inspection indicate that this dam is safe; however, the following conditions were noted that require attention:

1. The ends of the chute sidewalls have broken away and should be repaired.
2. Old washouts or erosion at the endwalls should be backfilled with suitable material, properly compacted and graded.
3. There is some light growth of brush on the embankment of the dam which should be removed.

We call these conditions to your attention now, before they become serious and more expensive to correct. With any correspondence, please include the number of the dam as indicated above.

Very truly yours,

*NLD*

NORMAN L. DIEGOLI, P.E.  
Acting Deputy Chief Engineer

*LEA*  
LEA:jmp  
cc: F. J. Hoey  
R. Salla

# INSPECTION REPORT - DAMS AND RESERVOIRS

## 1. LOCATION:

City/Town Leverett, County Franklin, Dam No. 2-6-154-1

Name of Dam Leverett Pond Dam

Mass. Rect.

Topo Sheet No. 11 B, Coordinates: N 534,000, E 328,700

Inspected by: Harold T. Shumway, On March 6, 1975, Date 6-15-72  
Last Inspection

## 2. OWNER/S: As of 6-15-72

per: Assessors \_\_\_\_\_, Reg. of Deeds \_\_\_\_\_, Prev. Insp. \_\_\_\_\_, Per. Contact \_\_\_\_\_

1. Mrs. Lucille W. Lewis, Main Street, Wendell, Mass. 617-544-6317  
Name St. & No. City/Town State Tel. No.

2. \_\_\_\_\_  
Name St. & No. City/Town State Tel. No.

3. \_\_\_\_\_  
Name St. & No. City/Town State Tel. No.

## 3. CARETAKER: (if any) e.g. superintendent, plant manager, appointed by absentee owner, appointed by multi owners.

Mr. Bradford H. Lewis, Montague Road, Leverett, Mass. 413-549-6498  
Name St. & No. City/Town State Tel. No.

## 4. DATA:

No. of Pictures Taken None, Sketches See description of Dam,  
Plans, Where None located

## 5. DEGREE OF HAZARD: (if dam should fail completely)\*

1. Minor \_\_\_\_\_, 3. Severe X

2. Moderate \_\_\_\_\_, 4. Disastrous \_\_\_\_\_

Comments: Large volume (133 million gallons) could cause severe damage in area of Tewaddle Hill Rd. and Cushman Rd.

\*This rating may change as land use changes (future development).

6. OUTLETS: OUTLET CONTROLS AND DRAWDOWN

No. 1 Location and Type: Center of dam - 2' W. x 6" H. conc. spillway with 4½' dropwall and conc. chute

Controls Yes, TYPE: There is provision for 6" H. stop log - none in place at time of inspection

Automatic       . Manual X. Operative Yes X, No       .

Comments: Concrete structure appears sound

No. 2 Location and Type: Base of spillway - 1' H. x 1½' W. conc. box sluice

Controls Yes, Type: Wood slide gate set in 3"X iron guides

Automatic       . Manual X. Operative Yes       , No       .

Comments: Top of gate 2½' below crest of spillway - appears sound

No. 3 Location and Type:       

Controls       , Type:       

Automatic       . Manual       . Operative Yes       , No       .

Comments:       

Drawdown present Yes X, No       . Operative Yes X, No       .

Comments: See Item #2 above

7. DAM UPSTREAM FACE: Slope Vertical, Depth Water at Dam 4'

Material: Turf       . Brush & Trees       . Rock fill       . Masonry       . Wood       

Other Concrete and stone masonry wall

Condition: 1. Good X. 3. Major Repairs       .

2. Minor Repairs       . 4. Urgent Repairs       .

Comments: No cracks or spalling evident in structure

8. DAM DOWNSTREAM FACE: Slope Vertical at dropwall

Material: Turf X. Brush & Trees       . Rock Fill X. Masonry       . Wood       

Other Concrete and stone masonry wall

Condition: 1. Good       . 3. Major Repairs       .

2. Minor Repairs X. 4. Urgent Repairs       .

Comments: Ends of spillway chute sidewalls beginning to unravel. Old wash or erosion of earth at ends of walls appear to have stabilized.

9. EMERGENCY SPILLWAY: Available X. Needed \_\_\_\_\_.

Height Above Normal Water: 1/2 Ft..

Width 20 Ft. Height 20 + Ft. Material Ledge and concrete.

Condition: 1. Good X. 3. Major Repairs \_\_\_\_\_.  
2. Minor Repairs \_\_\_\_\_. 4. Urgent Repairs \_\_\_\_\_.

Comments: Entire top of dam structure and abutting ledge face would serve  
as emergency spillway

10. WATER LEVEL AT TIME OF INSPECTION: 1/3 Ft. Above X. Below \_\_\_\_\_.

Top Dam \_\_\_\_\_ F.L. Principal Spillway X.

Other \_\_\_\_\_

Normal Freeboard 1/2 Ft.

11. SUMMARY OF DEFICIENCIES NOTED:

Growth (Trees and Brush) on Embankment Light growth of small brush on slopes

Animal Burrows and Washouts Yes - old washout still evident at ends of chute  
sidewalls.

Damage to Slopes or Top of Dam None found

Cracked or Damaged Masonry Ends of chute sidewalls broken away

Evidence of Seepage None found

Evidence of Piping None found

Leaks None found

Erosion Yes - see washout above - appears to be stabilized at present

Trash and/or Debris Impeding Flow Yes - 2 medium size boulders in stream bed  
at end of chute spillway

Clogged or Blocked Spillway None found

Other \_\_\_\_\_

(12.)

## OVERALL CONDITION:

1. Safe \_\_\_\_\_.
2. Minor repairs needed X \_\_\_\_\_
3. Conditionally safe - major repairs needed \_\_\_\_\_
4. Unsafe \_\_\_\_\_.
5. Reservoir impoundment no longer exists (explain)  
Recommend removal from inspection list \_\_\_\_\_

(13.)

## REMARKS AND RECOMMENDATIONS: (Fully Explain)

This appears to be an old but structurally sound stone and concrete dam built across a gap or depression in ledge outcropping about 20' to 30' wide and 5' to 6' deep. At time of inspection approximately 4 inches of water was flowing through the 2' wide and 6" high spillway notch in center of dam. No stop log was evident at crest of spillway notch. Investigation of base of dropwall showed a rectangular sluice opening 1' high and  $1\frac{1}{2}$ ' wide at and thru base of dam. Wood gate at upstream end of sluice appears sound. Ends of chute sidewall at downstream toe are beginning to break away or unravel slightly. Old washouts in this area are still evident but do not appear to have enlarged any since last inspection of June 15, 1972. Some light brush growth was noted on earth slopes. Conversation with caretaker's wife by phone on March 7, 1975 brought out information that due to secluded, isolated area of dam, some problems have arisen concerning water level of pond.

Apparently persons unknown place boards or stop logs across notch or weir of dam, thereby raising level of pond 6 inches. She stated her husband has had to remove these obstructions several times in recent years. The fact that some obstruction has been put in place on dam is soon noticed, however, as brook stops flowing downstream.

Mr. Bradford H. Lewis, Montague Road, Leverett, Massachusetts, is the caretaker of dam and is the owner's son. He requested any correspondence concerning dam be sent to him as caretaker of same.

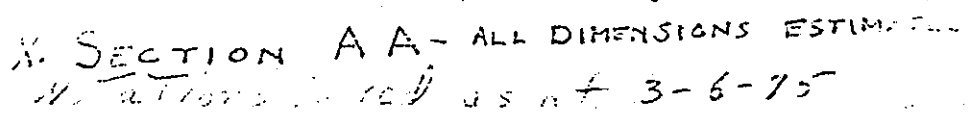
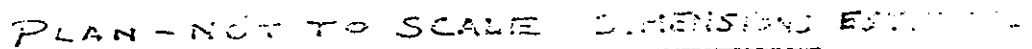
The District recommends that due to <sup>the</sup> somewhat isolated area <sup>the</sup> dam is in and due to large impoundment of water held back by dam, that caretaker be directed to repair washouts and ends of chute sidewalls. Also the two boulders in stream bed should be removed to allow free movement of water flow.

Dam appeared safe at time of inspection.

RCS/jc/vk

NOT TO SCALE

3" X 1/2" IRON GUIDES - 200  
SLUGS WAY STA  
1/2" - UNDER WAY



July 7, 1972

Mrs. Lucille W. Lewis  
Main Street  
Needell, Massachusetts

RE: Inspection of Dam #2-6-154-1  
Leverett  
Leverett Pond Dam

Dear Mrs. Lewis:

An engineer from the Massachusetts Department of Public Works has inspected the above dam, of which you are the owner.

The inspection was made in accordance with Chapter 253 of the Massachusetts General Laws, as amended by Chapter 595 of the Acts of 1970.

The result of the inspection indicates that no immediate maintenance or repairs are required; however, the following items were noted that will require your attention in the future:

1. Remove small trees northerly of spillway on downstream slope.
2. Repair the deterioration of concrete (small amount) in spillway sidewall.

We are calling these items to your attention now before they become more serious and expensive to correct.

Very truly yours,

*F.C.S.*

FRED. C. SCHWELM, P.E.  
Deputy Chief Engineer

*LAL*

LRA:pan  
cc: F. J. Joey, Dist. #2  
R. Salls, Dist. #2



## DAM INSPECTION REPORT

Inspected by R. C. Salls P.E. Date June 15, 1972Date Last Inspection 1970

Town Leverett County Franklin Dam No. 2-6-154-1  
 Name of Dam Leverett Pond Dam USGS ID# 11B Mass. Rect. 534,000  
 Coordinate N E 328,700  
 Sketch See Description of Dam Picture Available No Plans, Where No  
 Owner Representative Notified Date \_\_\_\_\_ By Letter \_\_\_\_\_ Tel. \_\_\_\_\_  
 Owner Representative -- Present Yes \_\_\_\_\_ No X  
 Owner Mrs. Lucille W. Lewis Per Town Assessors X As of \_\_\_\_\_  
Main St. Reg. of Deeds \_\_\_\_\_ June 22, 1972  
Wendell, Mass. Previous Insp. \_\_\_\_\_ telephone \_\_\_\_\_  
 Personal Contact X

STRUCTURAL DATADAM TYPE: Gravity Rock fill Straight X Curved \_\_\_\_\_ Arched \_\_\_\_\_ Other \_\_\_\_\_DAM MATERIAL: Earth \_\_\_\_\_ Conc. Mas. X Stone Mas. X Steel \_\_\_\_\_ Timber \_\_\_\_\_  
 Rock Fill X Old dry stone masonry faced with concrete.DAM DIMENSIONS: Length 15± Ft. Height 8-10 Ft. Widths, Top 17± Ft.  
 Base 17± Ft.Slope Downstream Face Vertical Slope Upstream Face VerticalFreeboard Normal \_\_\_\_\_ None \_\_\_\_\_ Ft. Depth Water at Dam 6± Ft.DAM FACE UPSTREAM: Turf \_\_\_\_\_ Brush & Trees \_\_\_\_\_ Rock Fill \_\_\_\_\_ Masonry X  
 Wood \_\_\_\_\_ Other \_\_\_\_\_ Concrete facing on dry stone.Condition: 1. Good X 2. Needs Minor Repairs \_\_\_\_\_  
 3. Needs Major Repairs \_\_\_\_\_  
 4. Urgent Needs Repairs for Safety \_\_\_\_\_DAM FACE DOWNSTREAM: Turf \_\_\_\_\_ Brush & Trees \_\_\_\_\_ Rock Fill X Masonry \_\_\_\_\_  
 Wood \_\_\_\_\_ Other \_\_\_\_\_Condition: 1. Good \_\_\_\_\_ 2. Needs Minor Repairs X  
 3. Needs Major Repairs \_\_\_\_\_  
 4. Urgent Needs Repairs for Safety \_\_\_\_\_

OUTLETS: Locations Center structure

Spillway - Type Drop wall Controlled Stop log

Width 2' Height 6" Material Concrete

Emergency Spillway - Available X Needed       

Height above Normal Water zero

Width 15+ Height 20+ Material Ledge and concrete.

Penstock: Size -- Type --

Trickle Tube: Size --

Outlet Controls Available Yes Condition Unknown Automatic       

Manual X Needed       

Drawdown Device: Present X Needed        Condition Unknown

Trash Racks, Screens: Present No Condition       

Needed No

#### AREA DATA

POND: Area 68 Acres Avg. Depth 6 Ft.

Acre Ft. 408

Water Impounded Gals. 133 million

Silted: Yes        No X Approx. Amount Pond       

DRAINAGE AREA: 0.6 Sq. M. TYPE: City, Bus. & Ind.       

Dense veg.        Suburban        Rural, Farm 1/8

Wood & Scrub Land 7/8 Slope: Steep 1/2 Med. 1/2 Slight       

DOWNSTREAM AREA: Valley Character: Narrow X Wide       

Developed        Rural X Urban       

#### DEFICIENCIES NOTED:

Growth Trees and Brush on Embankment Yes.

Animal Burrows and Washouts None found.

Damage to Top or Slope due to Traffic No

Cracked or Damaged Masonry None noted.

Evidence of Piping None found.

Evidence of Seepage None found.

Erosion Yes, at downstream end of spillway side walls.

Leaks None found.

Missing or Inadequate Trash Screens & Rack No rack - does not appear necessary

Clogged or Blocked Spillways no but some rubbish in spillway channel.

Inadequate Spillways No

Trash and/or Rubbish Available to Impede Flow Wooded Water Shed.

Condition Favorable for Injury to Public, i.e., Unprotected Penstock Opening, etc. Nothing unusual.

Other \_\_\_\_\_

OVERALL CONDITION: 1. Safe \_\_\_\_\_ 2. Safe, Minor Repairs Needed X

3. Conditional Safe, Need Urgent Repairs \_\_\_\_\_ 4. Unsafe \_\_\_\_\_

REMARKS and RECOMMENDATIONS

See attached sheet.

RCS/sd/lgn

Att.

Leverett Pond Dam  
Dam No. 2-6-154-1  
Leverett

-4

At the time of the inspection, approximately an inch of water was flowing over the crest of the dam for its entire length. A stop log was in place in the weir at the entrance of the spillway chute and the water was flowing over the top of the dam into the spillway chute or through two small washouts at the ends of the spillway chute sidewalls.

The structure is founded on ledge with ledge forming the abutments and is quite wide for its length. It appears to have been originally constructed of dry stone masonry with a stone and earth fill. Later the upstream face, part of the top and the spillway chute were reconstructed or faced with concrete. No cracks were found in this concrete which is at least twenty years old and the entire structure appears sound.

The sluiceway and its gate were under water but the gate when probed with a pole was sound.

There is a clump of small maples near the downstream end of the left or northerly spillway chute wall which should be cut.

The two small washouts at the ends of the spillway chute sidewall should be repaired and the masonry of the chute walls connected to the old dry stone masonry retaining walls to prevent further erosion.

The owner should be advised to perform the above maintenance.

RCS/agn

TOWN LEVERETT

2 - 1 - 1

Name Leverett Pond Dam

Inspection Date 1970

Owner

Location  $\frac{1}{2}$  mile north of Leverett Center

Type of Pond made

Acreage large

Drainage Area

Comments

Type of Dam stone with concrete face

Length 20 feet

Height 6 feet

Head of Water

Comments

Type of Spillway

Width

Height

Comments

Condition, Previous Report, Dated 1968 This dam is safe

Present Condition

## DESCRIPTION OF DAM

DISTRICT 2Submitted by R. C. SallsDam No. 2-6-154-1Date June 15, 1972City/Town LeverettName of Dam Leverett Pond DamAlso Beamon-Marvel Co., Dam No.Location: Topo Sheet No. 11BMass. Rect. Coordinates N 534,000 E 325,700Provide  $8\frac{1}{2}$ " x 11" in clear copy of topo map with location of Dam clearly indicated.On Branch of Doolittle Brook, for access take private gravel roadway offwest side of Montague Rd. just north of church in Leverett Center (roadjust opposite P.O.) to end then walk along shore of pond about 1/3 mile through  
weeds.Year built: UnknownYear/s of subsequent repairs UnknownPurpose of Dam: Water Supply            Recreational XIrrigation            Other Former reservoir for Mill dam below.Drainage Area: 0.6 sq. mi.            acres.Normal Ponding Area: 68 Acres; Ave. Depth 6 Ft. plusImpoundment: 133 Million gals; 408 acre ft.No. and type of dwellings located adjacent to pond or reservoir           i.e. summer homes etc. 30 to 40 dwellings--about 10 of which are full-time homes.Dimensions of Dam: Length 15 Ft. Max. Height 8 Ft. - 10 ft.Freeboard NoneSlopes: Upstream Face VerticalDownstream Face VerticalWidth across top 17+ Ft.

8.

## Classification of Dam by Material:

Earth \_\_\_\_\_ Conc. Masonry \_\_\_\_\_ Stone Masonry X  
 Timber \_\_\_\_\_ Rockfill \_\_\_\_\_ Other Dry stone masonry facing  
 with concrete.

9.

## A. Description of present land usage downstream of dam:

100 % rural; \_\_\_\_\_ % urban

B. Is there a storage area or flood plain downstream of dam which could accommodate the impoundment in the event of a complete dam failure. yes \_\_\_\_\_ no X

10.

## Risk to life and property in event of complete failure.

No. of people 6 to 7

No. of homes 6 to 7

No. of businesses None found.

No. of industries --

Type None found

No. of utilities 2 each

Type Pole lines. Electrical

Railroads None

transmission line 1½ miles downstream.

Other dams Old stone dam remains about 2000 ft. below plus dams in

Factory Hollow, Arherst.

Other --

11.

Attach Sketch of dam to this form showing section and plan on 8½" x 11" sheet.

JUNE 15, 1972

# SKETCHS

NOT TO SCALE

INLET 40 FT  $\pm$  WIDE FROM  
POND - DEPTH 6' PLUS

3" X IRON GUIDES FOR  
SLUICE WAY STOP  
LOSS - UNDER WATER

LEOGE

ROCK & EARTH  
FILL

CONC. SIDE WALLS  
SPILLWAY CHUTE  
APARANTLY CONCRETE  
FACING, OVER OLD  
STONE MASONRY.

DRY STONE  
MASONRY WALL

STOP LOG 6"  
CRESS DROP  
WALL

ROCK &  
EARTH FILL

CLUMP 3 ~~1/2~~ MAPLES

DRY STONE MASONRY  
WALL

ABOUT 2' DIAM. WASHOUTS AT ENDS OF  
SPILLWAY SIDE WALLS

PLAN - NOT TO SCALE DIMENSIONS ESTIMATED

4" STOP LOG

WATER LEVEL

CONC SIDE WALL  
SPILLWACHUTE

7 SLICK  
WAY

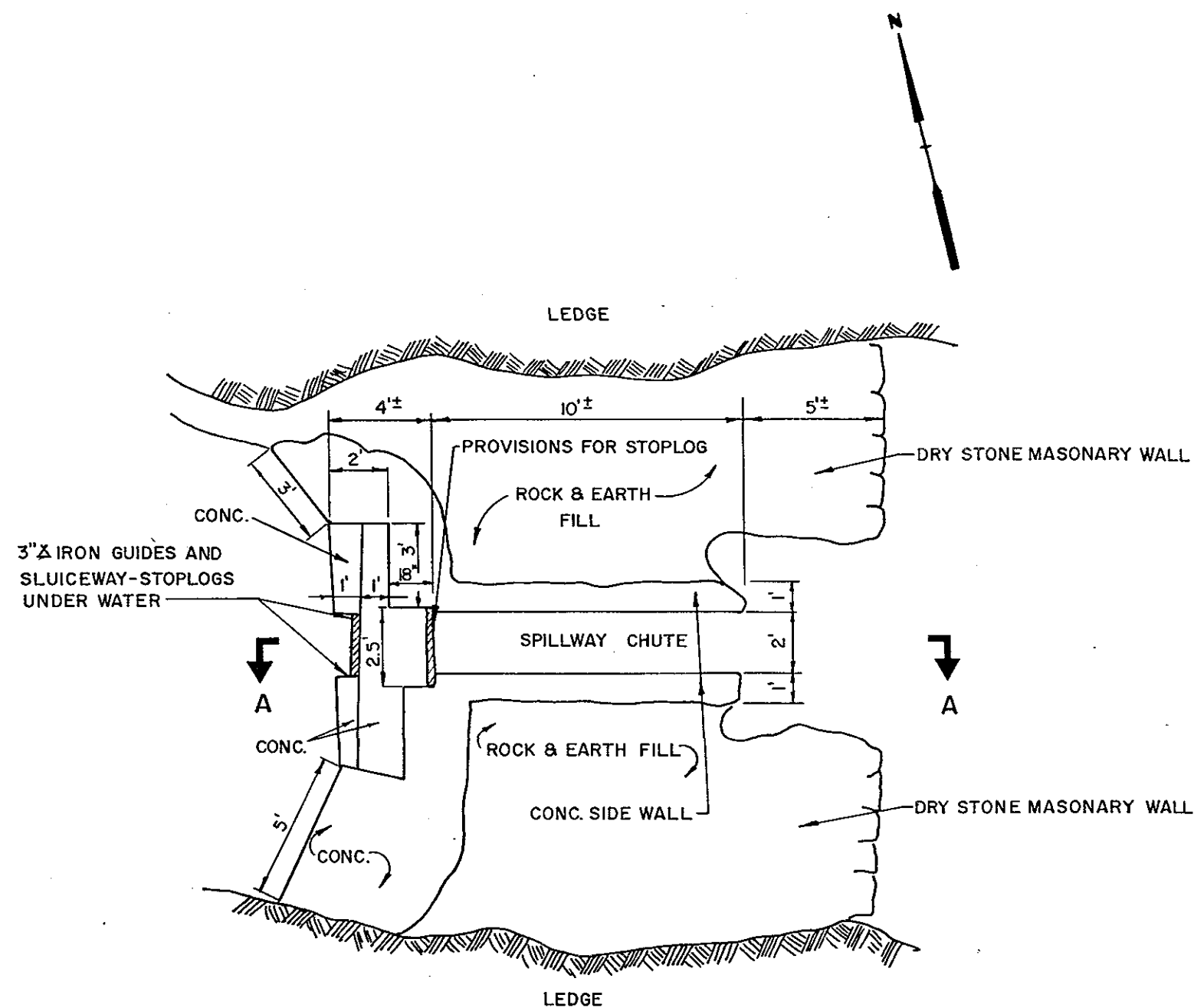
STOP LOG IN 3" X 180N  
GUIDE - SLUICeway  
GATE

DEPTH WATER  
5-6'

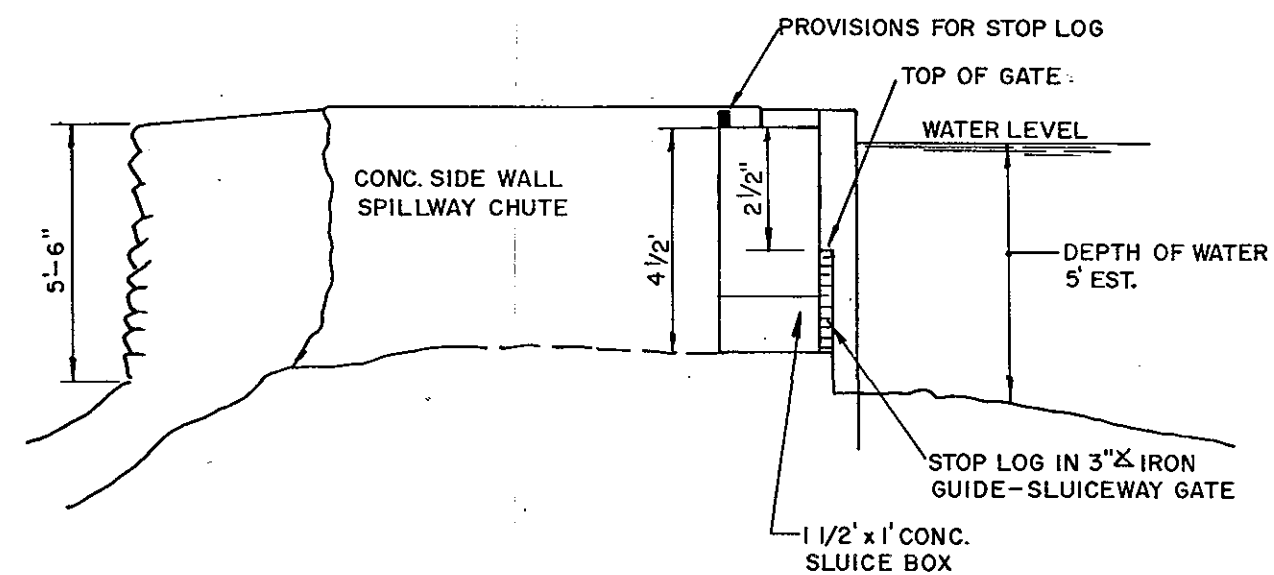
X. SECTION A A- ALL DIMENSIONS ESTIMATED







**PLAN**



**SECTION A-A**

INFORMATION SHOWN TAKEN FROM  
STATE INSPECTION REPORTS.

HAYDEN, HARDING & BUCHANAN, INC. CONSULTING ENGINEERS BOSTON, MASSACHUSETTS	U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.
NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS	
LEVERETT POND	
LEVERETT	
MASSACHUSETTS	
SCALE: NOT TO SCALE-DIMENSIONS EST. DATE: FEBRUARY, 1979.	

APPENDIX C  
PHOTOGRAPHS



DATE: FEBRUARY, 1979.



PHOTO NO. 1 - View of dam from downstream channel. The two walls of the spillway chute are shown. Note debris in spillway chute. Scale is open to four feet.



PHOTO NO. 2 - View of erosion next to right wall of spillway chute -- 3.5 feet of scale is visible.





PHOTO NO. 3 - Downstream channel as viewed from dam. Note remnants of dry stone masonry wall in foreground



PHOTO NO. 4 - General view of dam from left abutment area.





PHOTO NO. 5 - View of toppled dry stone masonry wall on the right side of the spillway chute.



PHOTO NO. 6 - View of downstream channel from a point about sixty feet from the dam.



PHOTO NO. 7 - View of Leverett Pond



PHOTO NO. 8 - View of Upstream left abutment taken from right abutment. Note pile of debris.





PHOTO NO. 9 - View of Upstream right abutment taken from left abutment.

APPENDIX D  
HYDROLOGIC AND HYDRAULIC COMPUTATIONS

78,294.1  
2/15/78  
1/4  
FDD 12/29/73



HAYDEN, HARDING & BUCHANAN, INC.  
CONSULTING ENGINEERS  
BOSTON, MASSACHUSETTS

SHEET NO. 1

JOB Dams  
SUBJECT Leavett Pond  
CLIENT Corps

Drainage Area = 4.79 sq mi or 0.69 sq mi. 442 a.

Down: Stream Hazard Potential = low

Dam Height  $\approx 5'$

Assume bottom of pond  $\approx 410$

Lake 417	0.86 sq mi	or	79.1 a	
420	1.33 sq mi	or	122.12 a.	.19 sq mi.
410	0.54		49.6 a	

Storage 410 to 417 =  $7 \times \left( \frac{79 + 49.6}{2} \right) = 450 \text{ a-f.}$

Height 5'

Dam Class = small

Hazard Potential = Low

Storm = 100 yr to 112 PMF

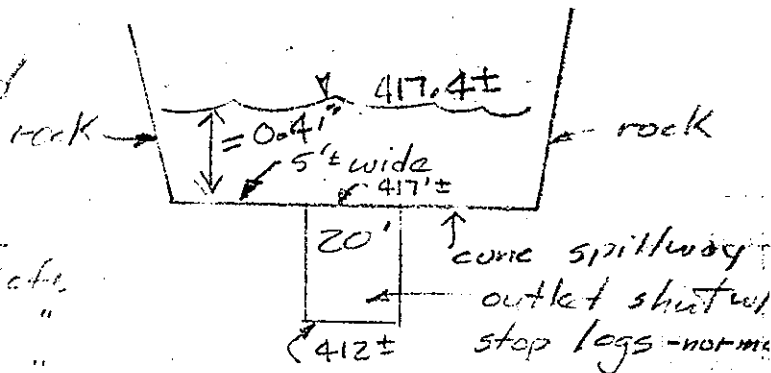
U.S.W.E. 100yr 65" rainfall 24 hour USDA-SC-TR55

D-5 Mod. 5%  $\frac{1}{2}$  in. CN = 70 type II storm Soil B-C

$Q = 140 \frac{\text{cfs}}{\text{inch}}$  @ dam outlet

$Q_T = 140 \times 1.15 \times 3.21 \text{ run off} = 517 \text{ cfs}$

Outlet Generalized



$\frac{D}{C}$	$\frac{L}{H^{3/2}}$	$\frac{Q}{H^{3/2}}$
0.5	2.64	15'
1.0	2.68	"
2.0	2.65	"
3.0	2.66	"
4.0	2.70	"
5.0	2.79	"
5.5	2.88	"
6.0	2.88	"

For  $Q_i = Q_{out}$   
with storage  $Q_{out} \approx 15 \text{ cfs}$

$t_c \approx 110 \text{ min} \pm$  max inflow or 39 a-f. depth = 0.4'  $\pm$   
or elev. = 417.4.  $Q_{out} \approx 15 \text{ cfs}$

13,294.1  
12/15/78  
MA  
FDD 12/29/79



HAYDEN, HARDING & BUCHANAN, INC.  
CONSULTING ENGINEERS  
BOSTON, MASSACHUSETTS

SHEET NO. 2

JOB Dams  
SUBJECT Leverett Pond  
CLIENT Corps

### Storage

	<u>Elev</u>	<u>Area</u>	<u>Ave Area</u>	<u>Stor</u>	<u>Accum - Stor</u>
	410	49.6 a	—	—	—
	412	64.1 a	56.9	114: a-f	114:
Top	417	100.35	82.3	411:	525:
	420	122.12 a	111.23	334:	859:
	421	134.12 <sup>±</sup> a	128.12	128:	987: a-f
	422.5	152.12 <sup>±</sup> a	143.12	215:	1202: "

1 1/2' x 1' outlet

$$A = 1.5' \quad WP = 5' \quad R = 0.3' \quad R = \frac{D}{4} \quad D = 1.2' \quad 15$$

<u>Elev</u>	<u>H</u>	<u>H/D</u>	<u>cfs</u>
417.4	5.4	4.32	15
417	5.0	4.0	14
415	3.0	2.4	10
412	1.0	0.8	3

If 1 1/2' x 1' outlet were functioning properly it could handle flows shown at left. It is adequate for 100 yr stor if pond level is lowered. Pond's stor capacity will retain inflow as outflow varies with water depth.

### Failure Analysis

$$Q_{PF} = \frac{8}{27} (5.675) (6') (5)^{3/2} = 113 \text{ cfs}$$

$$wb = 0.4 (15) = 6$$

$$y = 10'$$

if  $wb = 15'$   $Q = \frac{8}{27} (5.675) (15) (5)^{3/2} \approx 282 \text{ cfs}$   
For entire dam failure - catastrophic event

Flow from 257 a drainage area to N-E, west of Montague Road - feeds small brook. (steep areas)

$$Q = 140' \times 3.21 \times 1.15 = 517 \text{ cfs add to}$$

Flow at lower brook of Montague Rd

$$Q_T = 517 + 282 \approx 799 \text{ say } 800 \text{ cfs}$$

78.244.1

126/78

14

FDD



HAYDEN, HARDING & BUCHANAN, INC.  
CONSULTING ENGINEERS  
BOSTON, MASSACHUSETTS

SHEET NO. 3

JOB DAMS

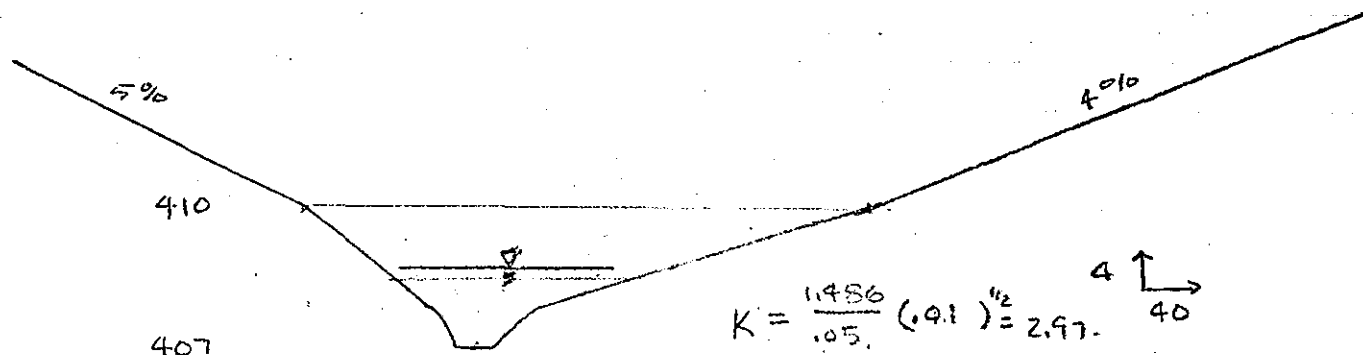
SUBJECT Leavitt Pond

CLIENT Corps

Sta 6+00

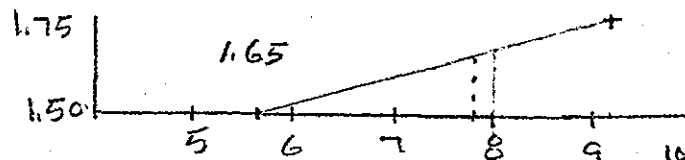
$$\frac{10'}{1100} = \frac{x}{100} \quad x = 0.9\% \text{ say } 1\%$$

elev 407±



<u>D</u>	<u>Δ</u>	<u>WP</u>	<u>R<sup>2/3</sup></u>	<u>K</u>	<u>V</u>	<u>Q</u>
3'	580 sf	125	2.8'	2.97	8.32	4826 cfs > 800
1.5	120 sf	60	1.59	"	4.73	567 < "
1.75	170 sf	70	1.81	"	5.38	915 cfs ≈ 800

elev ≈ 408.65'



$$V_1 = \frac{600}{43560} \left( \frac{170 + 1500}{2} \right) = 11.5 \text{ a-f } < \frac{1}{2} \times 450 \text{ OK.}$$

$$Q_{P_2} = 800 \left( 1 - \frac{11.5}{450} \right) = 780 \text{ cfs} \quad El_2 = 408.62$$

$$V_2 = \frac{600}{43560} \left( \frac{1500 + 168}{2} \right) = 11.48 \text{ a-f}$$

$$\text{Ave } V = 11.49 \text{ a-f} \quad Q_{P_3} = 800 \left( 1 - \frac{11.49}{450} \right) = 780 \text{ cfs}$$

78,244.1

1/26/78

MA

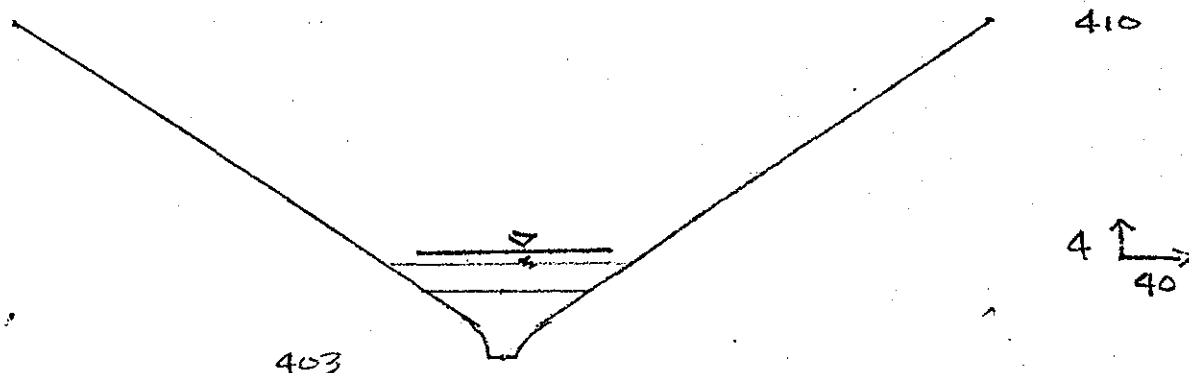
FDD



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BOSTON, MASSACHUSETTS

SHEET NO.

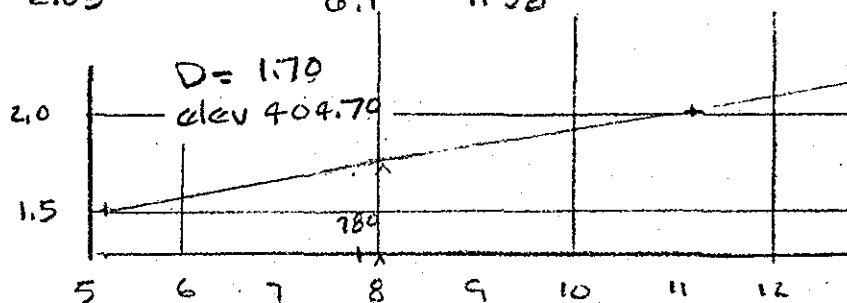
4

JOB DamsSUBJECT Leverett PondCLIENT CorpsSta 10+00

base flow  $\approx 520$  cfs  
Flood flow  $\approx 800$  cfs.

<u>D</u>	<u>A</u>	<u>WP</u>	<u>R<sup>2/3</sup></u>	<u>K</u>	<u>V</u>	<u>Q</u>
1.5	100	45	1.71	2.97	5.07	507 cfs
2.0	190	65	2.05	"	6.1	1158

$$A' = 130 \text{ sf}$$



$$V_1 = \frac{400'}{43560} \left( \frac{168 + 130}{2} \right) = 1.4' \text{ d.f.}$$

$$Q_{P2} = 780 \left( 1 - \frac{1.9}{460} \right) = 778 \quad \text{Let } Q_{Pa} = 778 \text{ cfs}$$

78.294.1  
12/21/78  
MA  
FDD



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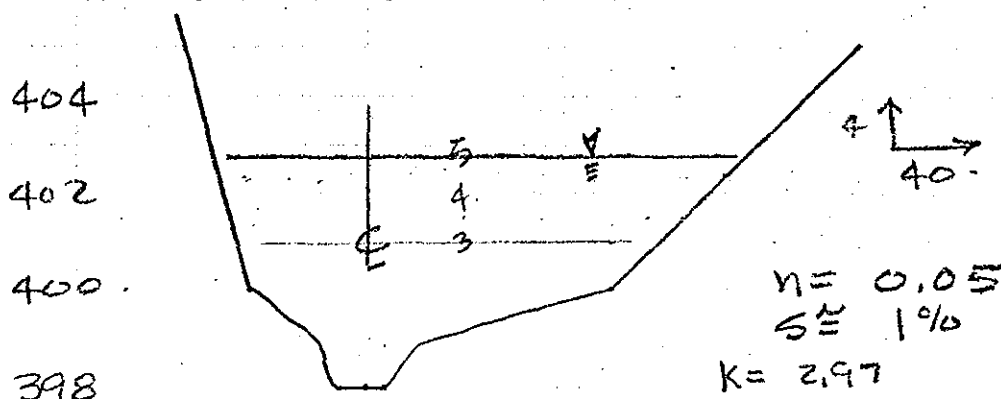
SHEET NO. 5  
JOB Dams  
SUBJECT Leavitt  
CLIENT Corps

500' Above Montague Rd.

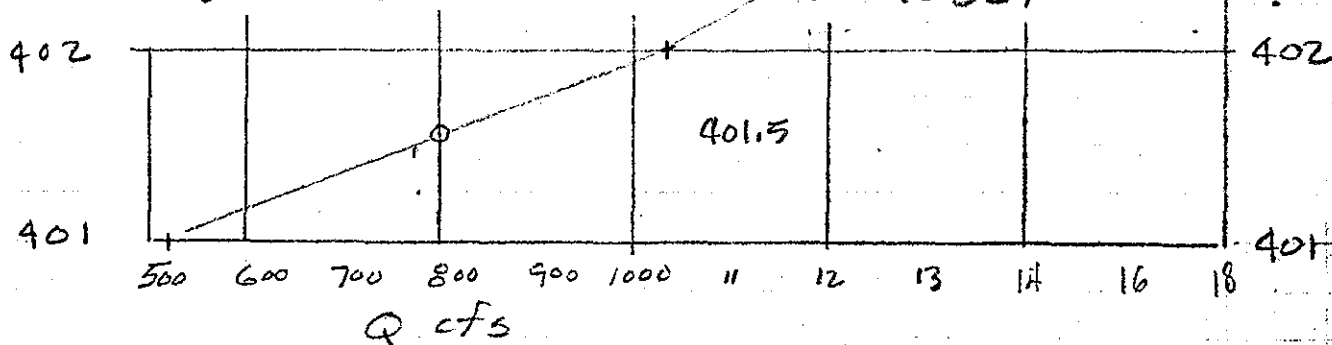
Stream elev 398±

Sta 15+00

Q = 778 cfs



D	VP	A	$R^{2/3}$	K	V	Q
3	115'	148	1.18	2.97	3.51	520 cfs
5'	155	343	1.7	"	5.1	1735
4	135	238	1.46	"	4.34	1032



$$V_1 = \frac{500}{43560} \left( \frac{130 + 700}{2} \right) = 4.75 \text{ ft/s}$$

$$Q_{P_2} = 778 \left( 1 - \frac{4.75}{4.50} \right) \approx 770 \text{ cfs} \quad \text{Ave } V = 4.72$$

$$V_2 = \frac{500}{43560} \left( \frac{130 + 687}{2} \right) \approx 4.69 \text{ ft/s}$$

$$Q_{P_3} = 778 \left( 1 - \frac{4.72}{4.50} \right) \approx 770 \text{ cfs}$$

78.244.1  
 2/22/78  
 MHA  
 Y PDD



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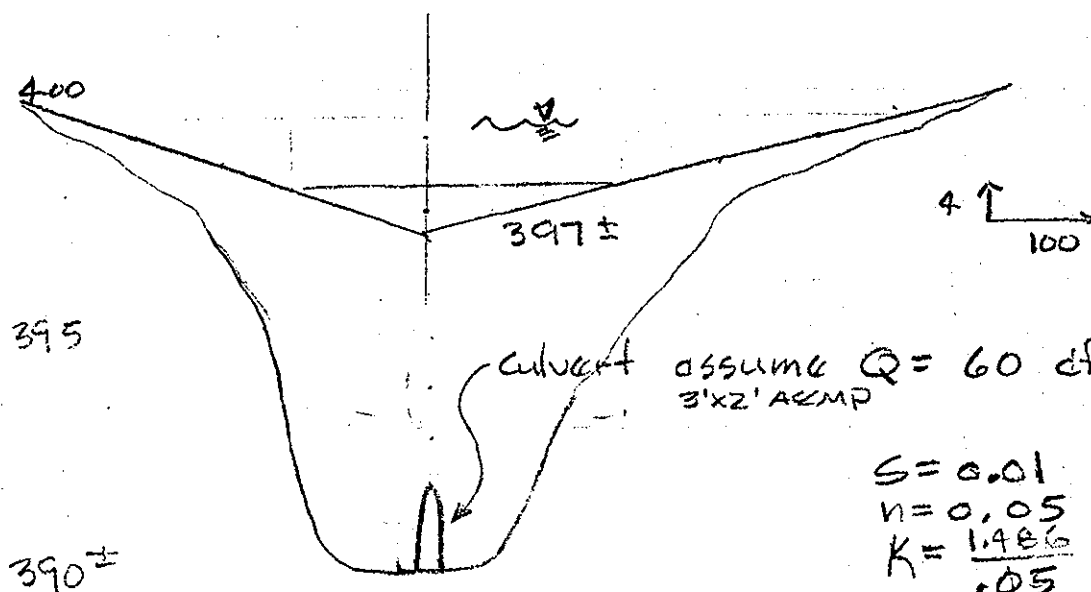
SHEET NO. 6  
 JOB Dams  
 SUBJECT Lavarett Pond  
 CLIENT Corps

Sta 20+00

Montague Rd.

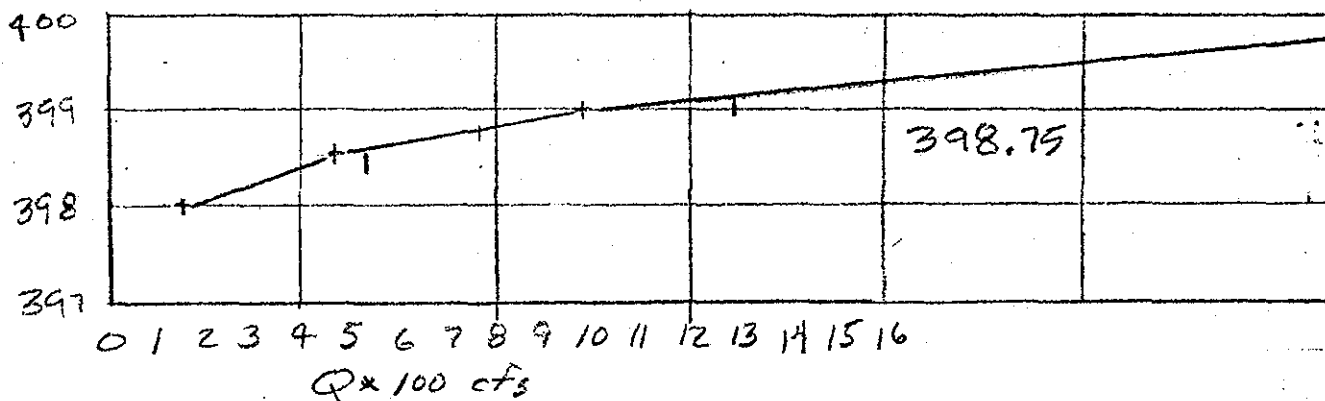
$Q = 770$

$10' / 1100' \approx 1\%$  elev of stream  $\approx 393$



$S = 0.01$   
 $n = 0.05$   
 $K = \frac{1.486}{0.05} (1.1) = 297$

<u>D</u>	<u>A</u>	<u>WP</u>	<u>R<sup>2/3</sup></u>	<u>K</u>	<u>V</u>	<u>Q</u>
1'	85	170	0.63	2.97	1.87	159 cfs
1.5	195	270	0.81	"	2.41	469
2'	345	370	0.95	"	2.82	973 cfs
3.0	765	520	1.30	"	3.85	12943





78.244.1  
 12/21/78  
 MA  
 FDD

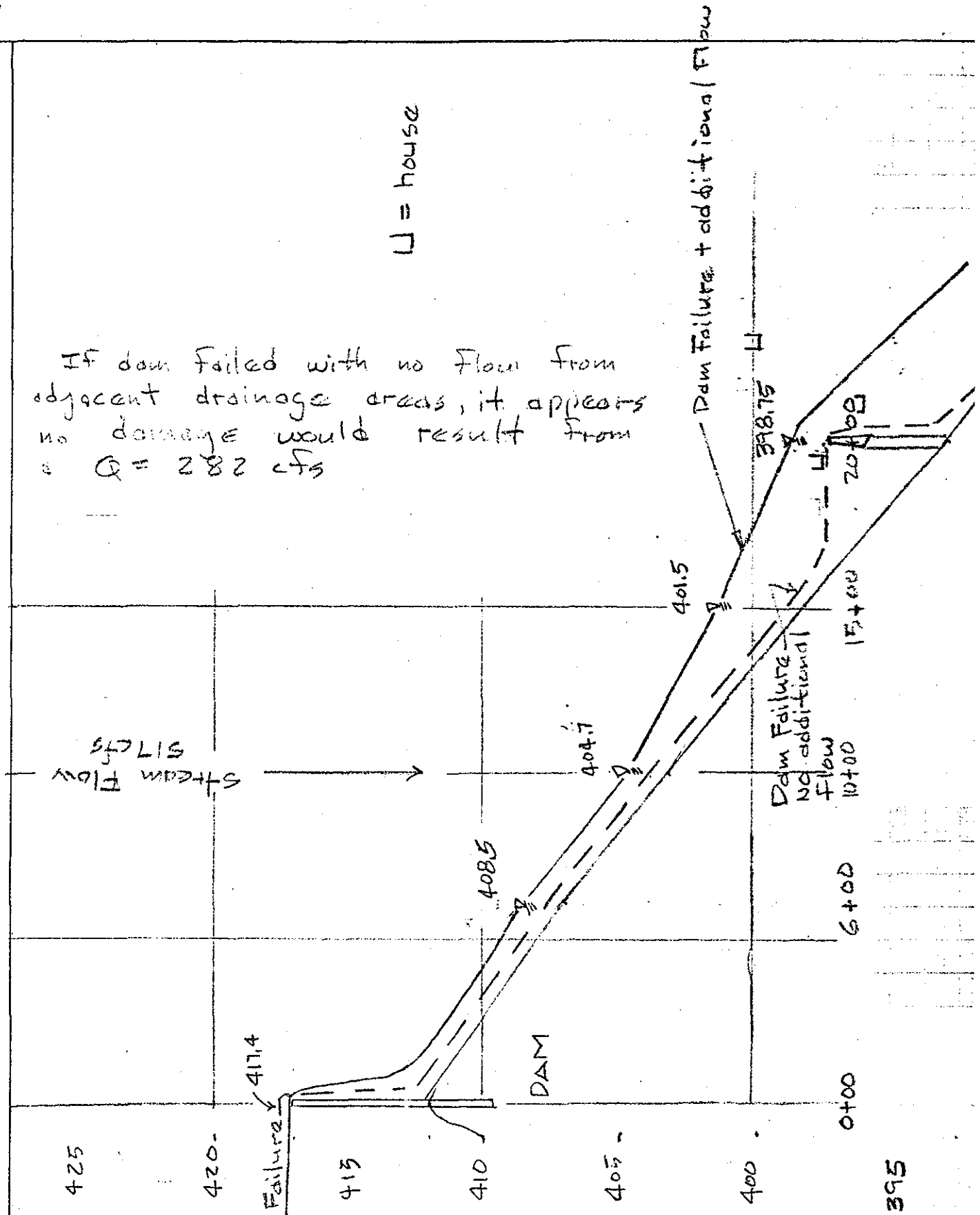


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SHEET NO. 7  
 JOB Dams  
 SUBJECT Levee #1  
 CLIENT Corps

U = house

If dam failed with no flow from adjacent drainage areas, it appears no damage would result from  $Q = 282 \text{ cfs}$



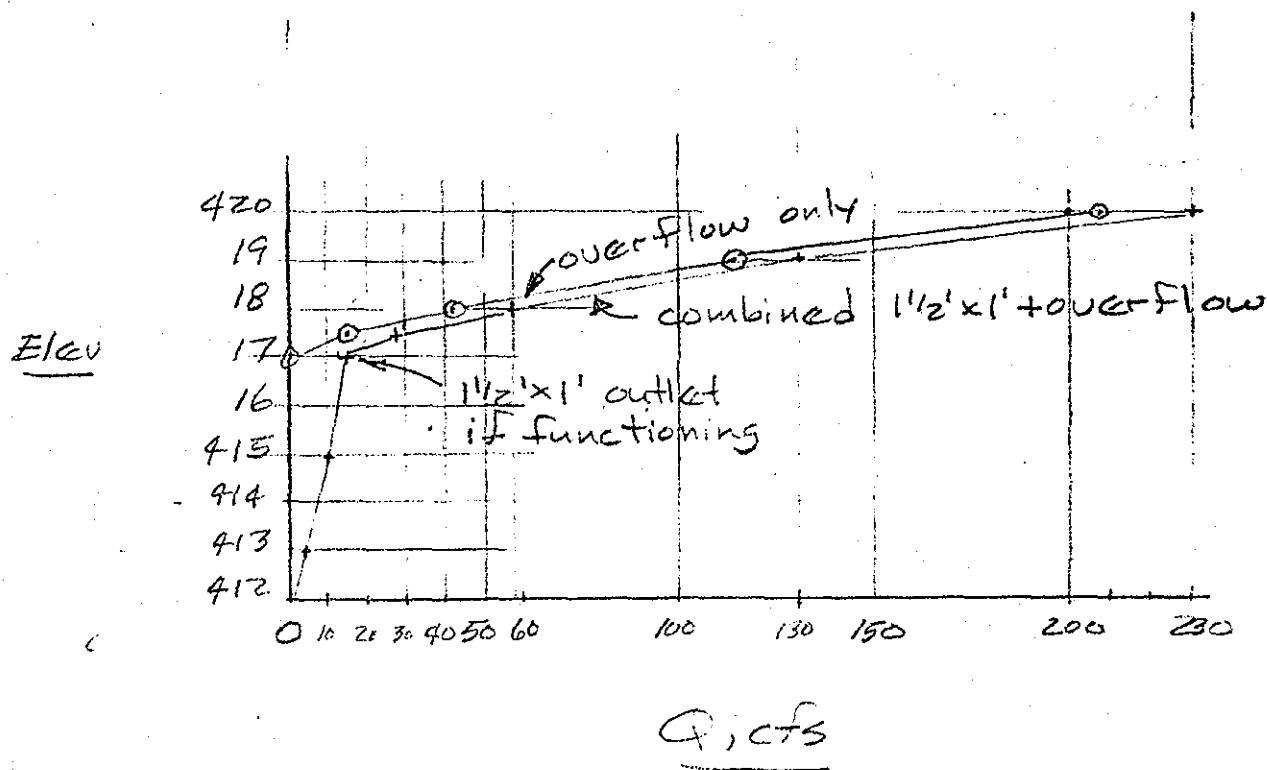
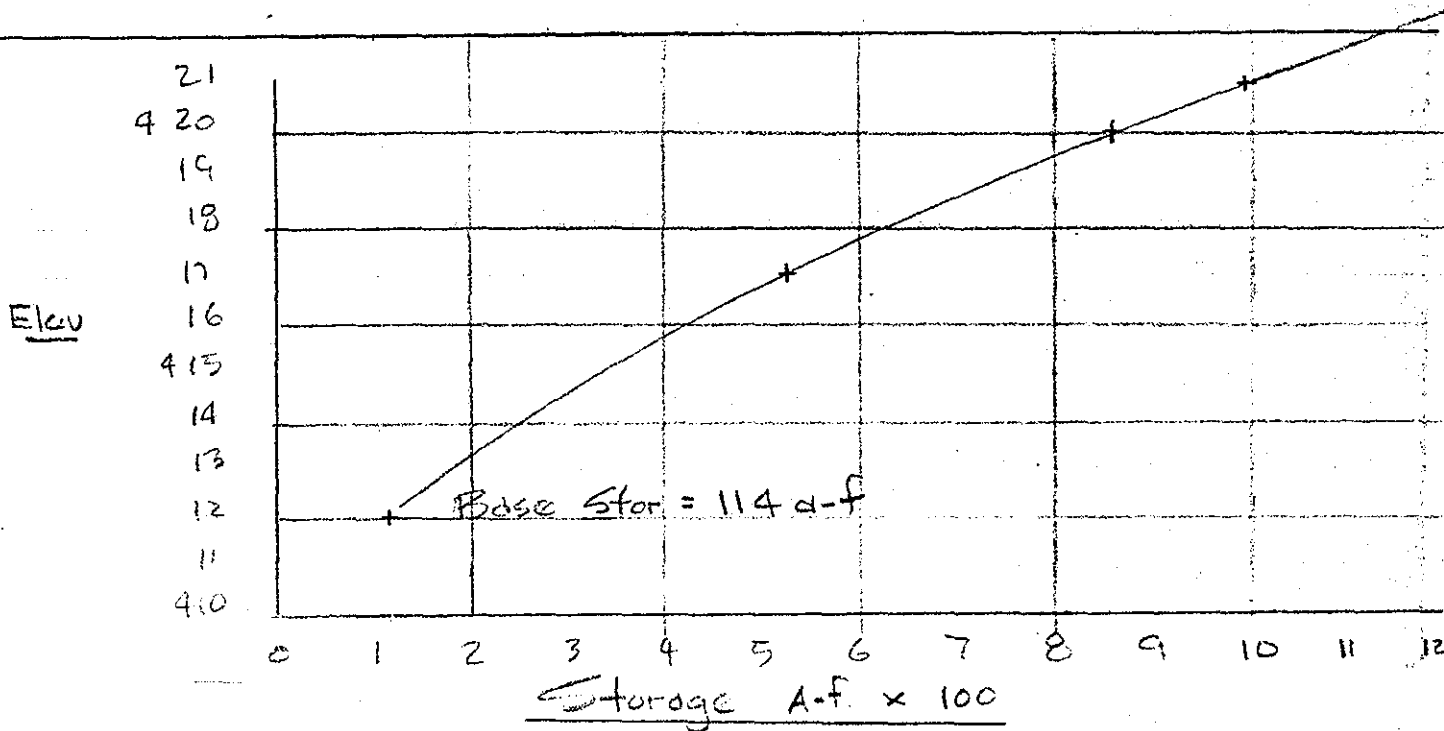
18.244.1  
2/21/78  
MA  
FDD

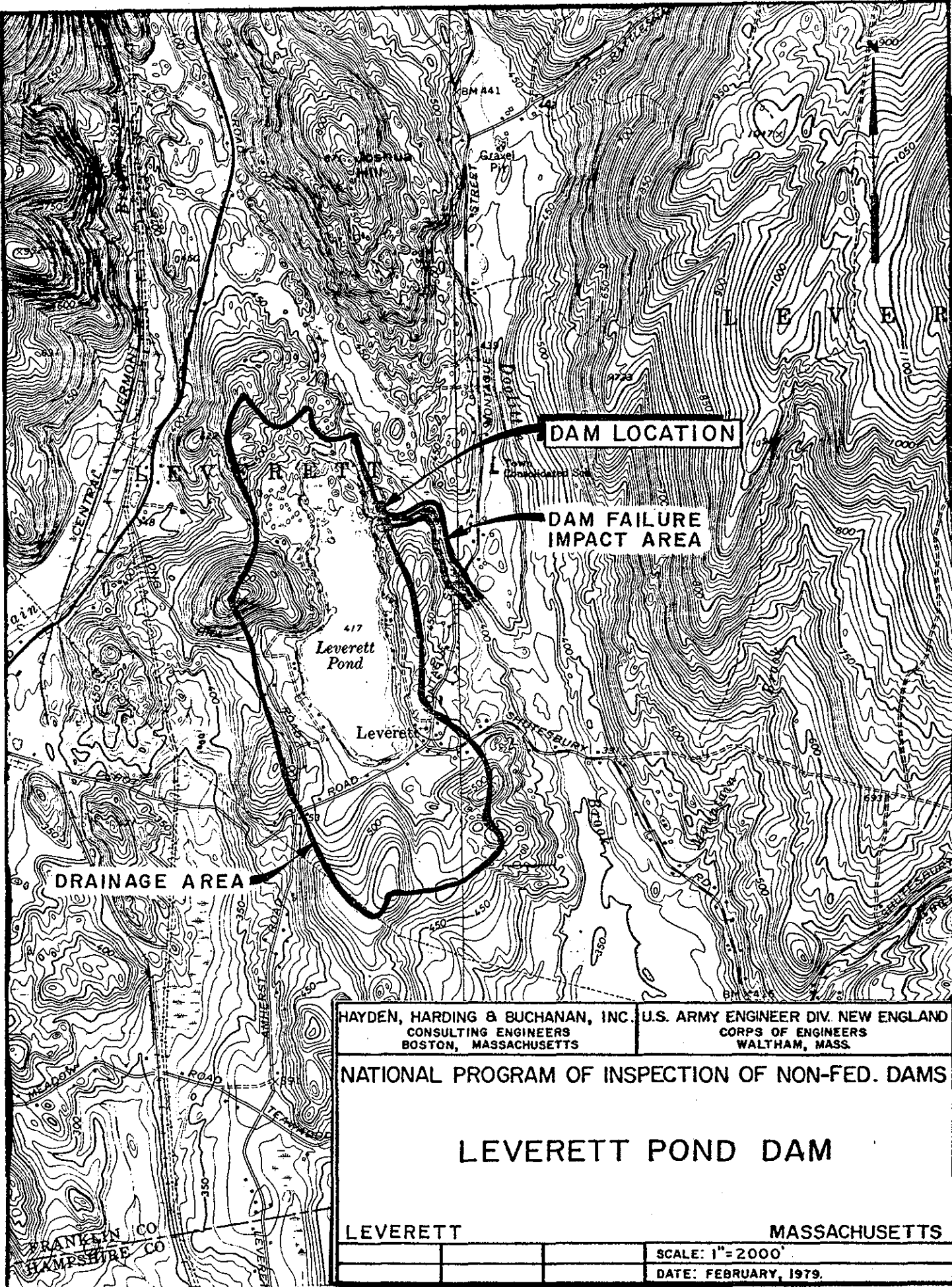


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SHEET NO. 8

JOB Dams  
SUBJECT Louisa Pond  
CLIENT Corps





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BOSTON, MASSACHUSETTS

U.S. ARMY ENGINEER DIV. NEW ENGLAND  
CORPS OF ENGINEERS  
WALTHAM, MASS.

NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

## LEVERETT POND DAM

LEVERETT

MASSACHUSETTS

SCALE: 1"=2000'

DATE: FEBRUARY, 1979.

APPENDIX E

INFORMATION AS CONTAINED IN THE  
NATIONAL INVENTORY OF DAMS